4-21-2012

Spokane Intercollegiate Research Conference 2012

Gonzaga University

Spokane Intercollegiate Research Conference
Gonzaga University
April 21, 2012

Contents

This year's Spokane Intercollegiate Research Conference is sponsored by the
Office of the Dean of the College of Arts and Sciences and the
Office of the Academic Vice President of Gonzaga University.

Welcome from the President of Gonzaga University

Dear Conference Participants:

Greetings and welcome to the 10th Annual Spokane Intercollegiate Research Conference! On behalf of the Gonzaga community, I would like to thank all students—from Whitworth, Eastern Washington University, Washington State University, Spokane Community College and Gonzaga—for your participation in this conference. I am especially pleased and proud that Gonzaga is hosting this gathering as we celebrate a decade of student inquiry, creative activity, and scholarship.

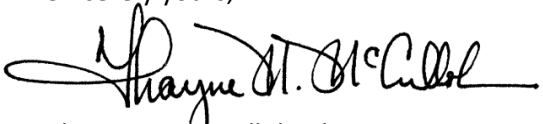
First, I would like to extend my sincere thanks and appreciation to Gonzaga's College of Arts and Sciences—particularly Dr. Patricia Terry, Mrs. Carolyn Von Muller, and the faculty planning committee—for organizing the event. As has been the case in the past, I am impressed by the quality and diversity of student applications—ranging in subject from Biology, Communication Arts, Math, Philosophy, Political Science, Psychology, to Special Education, Art, Literature, Environmental Studies, Sociology and more—and I am energized by the wealth of distinguished, original student research that will be presented at this conference. I am also grateful to the faculty members from the participating institutions who have mentored the student presenters, as well as to those who are giving their time to chair presentation sessions during the conference.

I would also like to express our thanks to Dr. Erica Flapan, a mathematician who is currently the Lingurn H. Burkhead Professor of Mathematics at Pomona College in Claremont, California. A respected research mathematician, she has been successful at establishing a common language between scientists and mathematicians which makes interdisciplinary research possible. We are fortunate and grateful to have Dr. Flapan share her insights and experience with us at this conference.

Students, thank you for the hard work you invested in preparing your research; it is your dedication and passion that makes this such a valuable event. This is a wonderful opportunity to hear about excellent scholarship from a variety of fields, to see what other students and researchers are working on, to get experience presenting your own work to an audience, and to get feedback from outside sources. We know that undergraduate research, especially in conjunction with faculty mentors, is one of the high-impact practices that result in deeper learning and lead to student success in college and beyond. That makes this conference a valuable support for your scholarly development.

I wish the participants and organizers of this event all the best, and I am very happy that Gonzaga can play a role in supporting and celebrating student scholarship.

Sincerely yours,



Thayne M. McCulloh, Ph.D.
President

SPOKANE INTERCOLLEGIATE RESEARCH CONFERENCE
SATURDAY, APRIL 21, 2012
GONZAGA UNIVERSITY CAMPUS
Conference Schedule

Conference Registration/Check-In: 8:30 am – 3:00 pm		**Main Entrance, Cataldo Hall**
Sessions 1 – 12: 9:00 am – 10:15 am		
Session 1	Education and Writing	128 College Hall
Session 2	Sociology of Sport	130 College Hall
Session 3	The College-Aged Consumer	132 College Hall
Session 4	General Biology I	133 College Hall
Session 5	Anonymous	135 College Hall
Session 6	Literature and Its Contexts	137 College Hall
Session 7	Testing Methods in Engineering and Computer Science	203 College Hall
Session 8	Economics and Its Impacts	237 College Hall
Session 9	Exploring Metabolic Pathways	239 College Hall
Session 10	British Women Writers and Place	241 College Hall
Session 11	Language: Evolution and Cultural Significance	242 College Hall
Session 12	Sociology of Popular Culture	245 College Hall
Sessions 13 – 24: 10:30 am – 11:45 am		
Session 13	Empirical Approaches to Human Behavior I	128 College Hall
Session 14	General Biology II	130 College Hall
Session 15	Data Flow Management	132 College Hall
Session 16	Digital Piracy	133 College Hall
Session 17	Gender, Reproduction and Intimate Relationships	135 College Hall
Session 18	Environmental Policy	137 College Hall
Session 19	Characterization of Biomolecules	203 College Hall
Session 20	Social Problems and Social Change	237 College Hall
Session 21	Happiness and Depression	239 College Hall
Session 22	Sociology and the Internet	241 College Hall
Session 23	Women's Roles in Fiction and Faith	242 College Hall
Session 24	Morning Poster Session	101 College Hall
Break for Lunch: Noon – 12:30 pm		Globe Room, Cataldo Hall
Lunch ***(by previous reservation only)*** for student participants, faculty sponsors and invited guests		
Guest Speaker – Open to All: 12:30 pm – 1:15 pm		Globe Room, Cataldo Hall
Dr. Erica Flapan, Lingurn H. Burkhead Professor of Mathematics at Pomona College		
Sessions 25 – 37: 1:30 pm – 2:45 pm		
Session 25	Cultural Meanings	128 College Hall
Session 26	Online Marketing Tools	130 College Hall
Session 27	Power, Resistance and Rituals	132 College Hall
Session 28	Imagining Ireland: Joyce, Yeats and the Literary Revival	133 College Hall
Session 29	Criminal Justice in America	135 College Hall
Session 30	The Internet and Freedom of Information	137 College Hall
Session 31	"Yeah, I Know the Type": Lessons in Perceptual Acuity	203 College Hall
Session 32	Static Vision and Moving Boats: Perspectives in Creative Nonfiction	237 College Hall
Session 33	Meeting Targeted Organizational and Consumer Needs	239 College Hall
Session 34	Empirical Approaches to Human Behavior II	241 College Hall
Session 35	Solving Problems in the Developing World	242 College Hall
Session 36	Applied Materials Development and Characterization	245 College Hall
Session 37	Perspectives on Human Needs, Authenticity and Coping	Magnuson Theatre Stage
Sessions 38 – 49: 3:00 pm – 4:15 pm		
Session 38	Synthesis and Characterization of Drugs	128 College Hall
Session 39	Sociology of Health and Wellness	130 College Hall
Session 40	U.S. and International Policy and Law	132 College Hall
Session 41	Stratification and Inequality	133 College Hall
Session 42	Topics in Philosophy	135 College Hall
Session 43	Functions and Mathematical Models	137 College Hall
Session 44	The Social Network: The Effectiveness of Social Media Tools	203 College Hall
Session 45	The Economics and Wages, Crises and Athletics	237 College Hall
Session 46	Women in Photography	239 College Hall
Session 47	History, Cult and Culture	241 College Hall
Session 48	The Personal Effects of Discrimination	242 College Hall
Session 49.1	Afternoon Poster Session 1	424 College Hall
Session 49.2	Afternoon Poster Session 2	427 College Hall

Spokane Intercollegiate Research Conference
April 21, 2012
Gonzaga University Campus

Keynote Speaker: Erica Flapan, Ph.D.

Keynote Address: "Mirror Image Symmetry from Different Viewpoints"

In this lecture Dr. Flapan will give examples of mirror image symmetry in various contexts, from music to poetry to sports to people and finally to molecules. She will explain why it is important to know whether a molecule has mirror image symmetry and present examples of molecules that are symmetric or asymmetric from different viewpoints. Finally, she will explain what "topology" is and why topological asymmetry is the deepest type of asymmetry. This talk is intended for a general audience; no background in chemistry or mathematics is necessary.

Biography:

Erica Flapan received her BA from Hamilton College in 1977 and her PhD from the University of Wisconsin in 1983. She was a post-doc for two years at Rice University and for one year at the University of California at Santa Barbara. She joined the faculty at Pomona College in 1986. Since 2006, she has been the Lingurn H. Burkhead Professor of Mathematics at Pomona College. In addition to teaching at Pomona College, since 2000 Flapan has been teaching at the Summer Mathematics Program for freshmen and sophomore Women at Carleton College.

She has done research in knot theory and the study of 3-manifolds. She is also one of the pioneers of the study of the topology of graphs embedded in 3-dimensional space, and has published extensively in this area and its applications to chemistry and molecular biology.

In addition to her research papers, she has published three books. The first, *When Topology Meets Chemistry*, was published jointly by the Mathematical Association of America and Cambridge University Press. The second book, *Applications of Knot Theory*, is a collection of articles that Flapan co-edited with Dorothy Buck. Most recently, she co-authored an elementary textbook, *Number Theory: A Lively Introduction with Proofs, Applications, and Stories* with James Pommersheim and Tim Marks.

In 2007, she won the Mathematical Association of America's Haimo Award for Distinguished College or University Teaching of Mathematics.

The keynote address will begin at 12:30 pm in the Cataldo Hall Globe room and is open to all conference participants.

SPOKANE INTERCOLLEGIATE RESEARCH CONFERENCE
April 21, 2012 — Gonzaga University
SESSION SUMMARIES

Session 1: 9:00 – 10:15 am **Room 128 College Hall**
EDUCATION AND WRITING
Faculty Moderator: John Eliason, Gonzaga University

1A Daniel Fladager: Teaching Originality in Freshman-Level Research Papers
1B Aman Kaur: Middle Eastern History and Why It Should be Taught More Thoroughly in High Schools
1C Maryssa Thompson: Authenticity in Personal Narrative: Recognizing the 'Other'

Session 2: 9:00 – 10:15 am **Room 130 College Hall**
SOCIOLOGY OF SPORT
Faculty Moderator: Nicole Willms, Gonzaga University

2A Brandon Barberio: Chasing the Jersey: The Impact of Athletic Celebrity on Personal Relationships
2B Rachel Goodrich: Beers, Cheers, and Violent Jeers; Gender and Sports Bar Behavior
2C James Partee and Casey Ames: Culture and Status in College Sports

Session 3: 9:00 – 10:15 am **Room 132 College Hall**
THE COLLEGE-AGED CONSUMER
Faculty Moderator: Ryan Herzog, Gonzaga University

3A Kelsey Bacon: The Use of Color in the Retention of Information in Print Advertisements Among College Students
3B Kara Heatherly: Collegiate Coupon Clipping: Thriving or Diving?
3C Lindsay Jones: Do Customers Respond Differently to Short and Long-Term Promotional Offers?
3D Kelsie Raunio: How Spokespeople for Cosmetic Brands Influence Purchasing Behavior among College-Age Women?

Session 4: 9:00 – 10:15 am **Room 133 College Hall**
GENERAL BIOLOGY I
Faculty Moderator: Marianne Poxleitner, Gonzaga University

4A Zach Damby: Isolating Novel Mycobacteriophages
4B Emily Carlson: Determining Cluster Identification of Newly Discovered Bacteriophage
4C Jack Dunbar: Enumerating Arsenic-Reducing Bacteria in Sediment
4D Andrew Wilson: Isolation and Sequencing of Whole Chloroplast Genomes from Erythroxylum

Session 5: 9:00 – 10:15 am **Room 135 College Hall**
ANONYMOUS
Faculty Moderator: Sean Swan, Gonzaga University

5A Austin Rogers: Legal Responses to Anonymous
5B Dustin Phillips: Anonymous: The Power of an Idea
5C Jackie Pittaway: Identifying Anonymous
5D Richard Redford: Anonymous: Project Chanology

Session 6: 9:00 – 10:15 am **Room 137 College Hall**
LITERATURE AND ITS CONTEXTS
Faculty Moderator: Ben Semple, Gonzaga University

6A Monika Cetnarowski: The Exemplary Genre of the 18th Century in France: The Epistolary Novel
6B Sarah Gambell: The Passage from Oral Tradition to Written Literature in Medieval France
6C Bridger Landle: The Ontology of Macbeth: Foreknowledge, Necessity, and Implications
6D Ruth Nalty: Focus or Omission: Mansfield Park Film Adaptations' Take on Slavery

Session 7: 9:00 – 10:15 am **Room 203 College Hall**
TESTING METHODS IN ENGINEERING AND COMPUTER SCIENCE
Faculty Moderator: Vesta Coufal, Gonzaga University

7A Robert Patrick McCarthy: Research and ICP Testing of Electroplating Bath Chemistry
7B Jessica Monroe and Ryan Matthis: Flexural Bond Strength of Saturated Masonry Prisms
7C Patrick Yoho: PowerStorm: An Eco-Visualization Tool for Reducing Electricity Consumption on Small College Campuses

Session 8: 9:00 – 10:15 am **Room 237 College Hall**
ECONOMICS AND ITS IMPACTS
Faculty Moderator: John Beck, Gonzaga University

8A Natasha Black: The Magic of Property Rights
8B Julia Hubbard: What is so Super about Living near a Superfund Site?
8C Christian Klein: 2007 Housing Bubble
8D Daniel Shetler: Integrating Computer Science into K-12 Classrooms

Session 9: 9:00 – 10:15 am **Room 239 College Hall**
EXPLORING METABOLIC PATHWAYS
Faculty Moderator: Jennifer Shepherd, Gonzaga University

9A Joe Driver: Exploring the Metabolic Role of *Burkholderia cenocepacia* HMGR
9B Fernando Rodriguez Perez: Screening of Rhodoquinone Biosynthetic Gene Targets Using R. rubrum Deletion Mutants and Characterization of Gene Products
9C Nicolas Contreras: Elucidation of Genes Responsible for Amidotransferase Step in RQ Biosynthesis
9D Erin Dickson: Expression and Characterization of a Putative Methyltransferase Involved in Rhodoquinone Biosynthesis in Rhodospirillum rubrum

Session 10: 9:00 – 10:15 am **Room 241 College Hall**
BRITISH WOMEN WRITERS AND PLACE
Faculty Moderator: Michelle Smith, Whitworth University

10A Ana Quiring: British Women Writers and Place
10B Jacqueline De Jong: Jane Austen: From Anonymity to 21st Century Religion
10C Caroline Swinford: More than Half a Poet: Dorothy Wordsworth and the Grasmere Journal

Session 11: 9:00 – 10:15 am **Room 242 College Hall**
LANGUAGE EVOLUTION AND CULTURAL SIGNIFICANCE
Faculty Moderator: Amanda Clark, Whitworth University

11A Monica Calderon: Perceived Communication Competence among Monolinguals and Bilinguals of Bilingual Codeswitching
11B Heather Molvik: A Methodological Problem in the Study of the Evolution of Language: The Question of the Loss of Laryngeal Air Sacs and Humanoid Vocal Anatomy
11C Kyle Novak: Reverence for the Written Word

Session 12: 9:00 – 10:15 am **Room 245 College Hall**
SOCIOLOGY OF POPULAR CULTURE
Faculty Moderator: William Hayes, Gonzaga University

12A Brittany Clark: The Jersey-Junkie Effect
12B Alexandra Catibayan: "Female Fight Club": Gender, Raunch Comedy, and the Bridesmaids Phenomenon
12C Megan Wertman: You'll Be the Prince and I'll Be the Princess: Gender, Relationship Expectations, and Popular Music
12D Ashley Meagan Allen: Role Models?

Session 13: 10:30 – 11:45 am **Room 128 College Hall**
EMPIRICAL APPROACHES TO HUMAN BEHAVIOR I
Faculty Moderator: Gary Thorne, Gonzaga University

13A Andrew Maldonado, Gracie Tobar and Lindsay Durkin: Letter Identification Inside and Outside Convex Forms
13B Stevie Hamilton and Denis Ohlstrom: Linearization and Working Memory
13C Aaron Gillman and Morgan Robbins: The Effect of Point-Shaped Stimuli on Reaction Time in Visual Search
13D Logan Steele: Protectors or Promoters: Social Influences on Voluntary Sexual Initiation
13E Shannon Shiells & Nicole Sestrap: Are Individuals More Positively Biased Toward Themselves or Their Relationship Partners?

Session 14: 10:30 – 11:45 am **Room 130 College Hall**
GENERAL BIOLOGY II
Faculty Moderator: Brook Swanson, Gonzaga University

14A Kathleen Cloughesy: The Evolutionary Effects of Environmental Light and Conspicuousness of the Male Fiddler Crab
14B Will Glenny: Global Amphibian Decline Due to the Chytrid fungus Bd
14C Marshall Davis: Annotation and Predicted Gene Function in a Novel Mycobacteriophage
14D Patrick Hashiguchi: Unique Genes in the Bacteriophage SiSi Genome

Session 15: 10:30 – 11:45 am **Room 132 College Hall**
DATA FLOW MANAGEMENT
Faculty Moderator: Shawn Bowers, Gonzaga University

15A Michael Agun: Dynamic Load Balancing of Scientific Workflows for Distributed Systems
15B Douglas Coulson: A System for Visualizing Large Scientific Workflow Provenance Graphs
15C Joel Doehle: Security Concerns for Smartphone Ad-hoc Networks

Session 16: 10:30 – 11:45 am **Room 133 College Hall**
DIGITAL PIRACY
Faculty Moderator: Sean Swan, Gonzaga University

16A Evan Bull: SOPA: An Objective Point of View
16B Alexis DiSanza: Piracy as a Political Ideology
16C Christopher Friend: Cyber Warfare and Globalization
16D Emma Wabunsee-Kelly: Kopimism: A New Religion

Session 17: 10:30 – 11:45 am **Room 135 College Hall**
GENDER, REPRODUCTION AND INTIMATE RELATIONSHIPS
Faculty Moderator: Andrea Fallenstein, Gonzaga University

17A Alysha Chandra: Ending Intimate Partner Violence
17B Skye Miner: "Whose Pill Is It, Anyway?" Examining the Factors that Affect a Woman's Contraceptive "Choice"
17C Abbie Nordhagen: Motherhood Under Construction
17D Ashley Ruderman: The Pill: Striking a Balance between Technological Neutrality and Determinism

Session 18: 10:30 – 11:45 am **Room 137 College Hall**
ENVIRONMENTAL POLICY
Faculty Moderator: Michael Treleaven, Gonzaga University

18A Danielle Terry: Incentivizing Preservation: Human Determinism, Environmental Sustainability, and the Role of Additionality
18B Ryan Tuttle: The Role of the Mission Beach Habitat Network Action Plan in Community Resilience Following Cyclones Larry and Yasi
18C Chelsea Quilling: Environmental Policy and Infrastructural Development in Evo's Bolivia

Session 19: 10:30 – 11:45 am **Room 203 College Hall**
CHARACTERIZATION OF BIOMOLECULES
Faculty Moderator: Jeff Watson, Gonzaga University

19A Melissa Corson: Kinetic Characterization of Class II HMG-CoA Reductase in Burkholderia cenocepacia
19B Shelby Cate: Metallosubstitution of *b*-Carbonic Anhydrase
19C Ariam TecleMariam: Characterization of the antimicrobial properties of magainin-2 and melittin
19D Ian Joslin: Development of Membrane Mimetic Stationary Phases for Biomembrane Affinity Chromatography for Analysis of Natural and Synthetic Receptors.

Session 20: 10:30 – 11:45 am **Room 237 College Hall**
SOCIAL PROBLEMS AND SOCIAL CHANGE
Faculty Moderator: Nicole Willms, Gonzaga University

20A Nolan J. Grady: Leading Leaders: Examining the Difference of Student Leaders Enrolled in a Comprehensive Leadership Program
20B Seth Morrison: Decentralization of the HIV/AIDS Response: Community Home-Based Care (CHBC) in the Struggle to Curb the Epidemic
20C Rachel Wagner: Foster Care: Procedure, Practice, and Policy

Session 21: 10:30 – 11:45 am **Room 239 College Hall**
HAPPINESS AND DEPRESSION
Faculty Moderator: David Houglum, Gonzaga University

21A Nicole Barnhart: The Ups and Downs of Depression
21B Diana David and Brandon Barberio: A"Bad" Trait
21C Nicole Sanders and Andrew Newcombe: Are We Making Happiness Scarce?

Session 22: 10:30 – 11:45 am **Room 241 College Hall**
SOCIOLOGY AND THE INTERNET
Faculty Moderator: Chris LaSota**,** Gonzaga University

22A Kieran Craigie: Intellectual Property and Internet Piracy
22B Kaitlyn Dowd and Amanda Schmitz: The Truths of a Politician
22C Andy Jursik: It's Facebook Official!: Avatars and Identity on Facebook
22D Daniel Ortega: Forever Alone: An Experimental Examination of the Effect of Anonymity on Online Behavior

Session 23: 10:30 – 11:45 am **Room 242 College Hall**
WOMEN'S ROLES IN FICTION AND FAITH
Faculty Moderator: Karin Heller, Whitworth University

23A Karen Robison: The Women of A Prayer for Owen Meany: Subtle Hints of Comedy and Faith
23B Catherine Cook: Are Women Human?
23C Kayla Sisk: Mary in the Plan of God and the Communion of the Saints (An ecumenical discussion)

Session 24: 10:30 – 11:45 am **Room 101 College Hall**
MORNING POSTER SESSION
Faculty Moderator: Christy Watson, Gonzaga University

24A Anthony Austin-Walker: Diarchy or Monarchy? Identifying the Potentate of the Kingdom of God
24B Chelsea Bennett, Kyle Thomas and Kienen Loe: SNP Analysis of Cytochrome b for the Analysis of Genetic Diversity within *Odocoileus hemionus* Herds within Washington State
24C Nichole Boyd, Zhiwei Shi and Ryan Keefe: Development of Fluorometric Assays for the Neonatal Diagnosis of MPS IVa and MPS VI
24D Melaina Cole and Wendy Wingeard: The Effects of Reading Mastery with Flashcard Practice on the Development of Word Recognition with a Middle School Student
24E Kayla Conover, Chloe Cook and Marlowe Peter: The Effect of Hippotherapy on Voluntary Muscle Contraction
24F Gina M. Contolini: Variation in Fiddler Crab Claw Strength
24G Marisa Crisostomo: The Role of Perceptual Load in Visual Selective Attention and the Fate of Irrelevant Information: Part 1
24H Kristin Beltz: Establishing a Technique for Data Mining, Analysis, and Pattern Discovery of Autism Patient Data
24I Marina Defrates, Nicole Hamlin, KellyAnn Cameron and Austen Frostad: SNP Analysis of Intra-Herd and Inter-Herd Genetic Diversity of Ancient *Bison bison*
24J Tyler Dennis, Nicole Hamlin and Corey Horn: An Analysis of Human Alu Insertion Frequencies using Alu Specific PCR and Hardy-Weinberg Analysis
24K Alyson Donahoo: Effects of Moderate Exercise on Cognitive Processing and Reaction Time
24L Taylor Duncan: An Analysis of Adaptive SNP Frequency within ATP 6 within Mule Deer Populations in Washington State
24M Hannah Hawkins: Freedom of Speech: Internet Cases Impeding Citizen Rights
24O Carolyn Herrity: Using the Minnesota Nicotine Withdrawal Scale- Revised (MNWS-R) to Assess Withdrawal Symptoms in Recreational Hookah Users
24P MacGregor Hodgson: Development of Non-Invasive Protein Probes to Measure Ca++ in the Chloroplast Stroma and Thylakoid Lumen
24Q Laura Hoeg: Carbon Monoxide Effects Associated with Hookah Smoking
24R Candace Ireland, Nicole Ecklund and Joey Bell: SNP Analysis of Baseline Allele Frequency of Cytochrome b and ATP 6 within Ancient *Bison bison*
24S Amber Johnson: Optimizing Electrodes for use in Biosensors through Deposition of Prussian Blue and Nickel Hexaferrocyanide in Various Layers
24T Bethany Johnson: The Intersection of Psychological and Spiritual in Mental Illness
24U Kevin Johnston: Andean Frog Calling Activity in Response to Temperature
24V Alifiya Khericha: The Role of Perceptual Load in Visual Selective Attention and the Fate of Irrelevant Information: Part 2
24W Brittany Poff: The Effects of Cover, Copy, and Compare with Free Time in Math for Elementary Students with Severe Behavior Disorders
24X Whitney Larimer, Rebecca Nelson and Ashley Danforth: The Effects of Copy-Cover-Compare on Spelling Accuracy of a 5th-Grade Student Diagnosed with Attention Deficit Hyperactivity Disorder and on a 6th-Grade Student Diagnosed with Learning Disabilities
24Y Tae-Hun Lee, Kristin Wucherer, Christopher Frick and Helya Peyman: Molecular Cloning and Characterization of a Prolyl Dipeptidyl Aminopeptidase from *Lactobacillus helveticus*
24Z Hailey Markham-Patti and Keara Rypien: Quantification and Analysis of Apis melifera Mid-gut Bacterial DNA and the Effects of Agricultural Practices on the Population Density

24AA Katie McClanahan and Hannah Neill: Developing and Testing Fluorescence-Based Assays for Neonatal Diagnosis of Lysosomal Storage Diseases
24BB Adam Nekimken: SEM Investigation of the Fatigue Failure Effects of Hydrogen Embrittlement
24DD Russell Quamme: An HPLC Analysis of Coffee
24EE Tyson L. Rice, Katie Higgins and Nate Wareham: Discriminated Rebel? The Effects of Discrimination on Reactance
24FF Kayla Rothenbueler: College Stress: Are We Doing Enough?
24GG Frankie Russo: The Role of Perceptual Load in Visual Selective Attention and the Fate of Irrelevant Information: Part 3.
24HH Alicia St. Amont and Paige Henning: Analysis of Genetic Diversity and Gene Flow within *Richardsonious balteatus* (Redside Shiner) within the Latah Creek Watershed
24II Amanda Stewart: Extraction Efficiency Analysis of a Common DNA Extraction Protocol when Applied to *Apis mellifera* Mid-gut Tissue and Bacterial Consortia
24JJ Nicole Talkington: The Effects of Using Augmentative and Alternative Communication to Teach a Preschool Student with Developmental Delays to Request Assistance and Attention
24KK Dani Troup: The Use of Online Typing Programs In Combination with Public Posting with and without Consequences to Increase the Typing Fluency and Accuracy Skills of Seven High School Students with Severe Behavior Disorders
24LL Anne Marie Ulring: The Effects of Direct Instruction Flashcards and Reading Racetracks on Sight Word Accuracy of Three Elementary Students with Learning Disabilities
24MM Benita Bina Walker: An Econometric Inquiry into the Preference for Males in Relation to the Declining Sex Ratio in India
24NN Shaina Whittlesey: Effect of American Ginseng on Postprandial Blood Sugar Levels in Healthy Subjects
24OO Jennifer Wilson and Nicholas Gamboa: The Effects of Adenomatous Polyposis Coli Mutations on Cell Adhesion: A Window into Colorectal Cancer Development
24PP Lauren Worcester: The Effects of a Model Lead Test Format to Teach a 13-year-old Boy with Moderate Disabilities Sounds and Words

LUNCH **Noon – 12:30 pm** **Globe Room, Cataldo Hall**
Lunch *(by previous reservation only)* for participants, faculty sponsors and invited guests

KEYNOTE SPEECH **12:30 – 1:15 pm** **Globe Room, Cataldo Hall**
Dr. Erica Flapan, Lingurn H. Burkhead Professor of Mathematics at Pomona College

Session 25: **1:30 - 2:45 pm** **Room 128 College Hall**
CULTURAL MEANINGS
Faculty Moderator: Corliss Slack, Whitworth University

25A Chloe Dye: Seattle Architecture: Promotion of the City through the Use of Landscape
25B Jennay Smith : The German Christian Church, 1932-1945
25C Matthew McCourt : Mixed Messages: A Visual Analysis of Tibetan Cultural Representation in Beijing, China

Session 26: **1:30 - 2:45 pm** **Room 130 College Hall**
ONLINE MARKETING TOOLS
Faculty Moderator: Kevin Henrickson, Gonzaga University

26A John Baxley: The Effects of the Google Brand and Anonymous Online User Reviews on the Consumer Evaluation and Decision Process for Choosing a Restaurant while using Google Maps
26B Cuong Le: Best Mobile Marketing Tools to Achieve Marketing Objectives Among Traditional College-Age Students
26C Dustin Payne: The influence of Online Shopping and its Effects on Consumers
26D Kelli Raines: How the Use of Color in Online Advertisements Affect Awareness, Retention, and Attitude in College-Age Students

Session 27: **1:30 - 2:45 pm** **Room 132 College Hall**
POWER, RESISTANCE, AND RITUALS
Faculty Moderator: William Hayes, Gonzaga University

27A McCage Griffiths: Inked: An Ethnographic Study of the Tattoo Community
27B Victoria Ledesma: When Church and College Clash: Religion and the Hook-up Culture at a Private University
27C Diana Mallon: More Than Moans: "The Vagina Monologues" and Storytelling in Resistance
27D Priscilla Mullins: Fashion and Society

Session 28: **1:30 - 2:45 pm** **Room 133 College Hall**
IMAGINING IRELAND: JOYCE, YEATS AND THE LITERARY REVIVAL
Faculty Moderator: Charles Andrews, Whitworth University

28A Shannon Kelly: The Closet as a Cage: Homosociality in James Joyce's *A Portrait of the Artist as a Young Man*
28B Karen Robison: The Significant, Repeated Images of Hands in James Joyce's *A Portrait of the Artist as a Young Man*
28C Sara Pollock: The Myths of Ireland's Future

Session 29: 1:30 - 2:45 pm **Room 135 College Hall**
CRIMINAL JUSTICE IN AMERICA
Faculty Moderator: Al Miranne, Gonzaga University

29A Sean Sargent and Andrew Cataldo: Examining the Implications of Police Movie Trailers
29B Francisco Villa: No Room for Estrogen
29C Madeline O'Neil and Miguel Preciado: White Collar Crime: How the Media Influences Sentencing
29D Adriana Mendez: Justice for All? College Students' Perceptions of the American Criminal Justice System

Session 30: 1:30 - 2:45 pm **Room 137 College Hall**
THE INTERNET AND FREEDOM OF INFORMATION
Faculty Moderator: Sean Swan, Gonzaga University

30A Daniel Bossier: Pirates of the Political Realm: The Age of Free Information
30B Ian Larsen: Wikileaks and Freedom of Information
30C Cory Stumpf: The Ethics of Copyright in the Digital Age
30D Koby Warren: Digitalization and the Limits of Copyright Law

Session 31: 1:30 - 2:45 pm **Room 203 College Hall**
"YEAH, I KNOW THE TYPE": LESSONS IN PERCEPTUAL ACUITY
Faculty Moderator: Tony Osborne, Gonzaga University

31A Corey Protzman: The Illusionist
31B Abbie Nordhagen: "What's in a Name?": Different Coach, Different Game Plan
31C Regina White: Different Types of Doctors
31D Christine Ngan: Tell Me Your Preferences, and I'll Tell You Who Your Friends Are

Session 32: 1:30 - 2:45 pm **Room 237 College Hall**
STATIC VISION AND MOVING BOATS: PERSPECTIVES IN CREATIVE NONFICTION
Faculty Moderator: Nicole Sheets, Whitworth University

32A Kristen Bierlink: Dirty Words
32B Danielle Douvikas: Focus
32C Andrea Idso: Idso
32D Amy Thoburn: Sequestered at Sea

Session 33: 1:30 - 2:45 pm **Room 239 College Hall**
MEETING TARGETED ORGANIZATIONAL AND CONSUMER NEEDS
Faculty Moderator: Rebecca Bull Schaefer, Gonzaga University

33A Heather Bowman: What College Students Look for in a Bank Account and the Factors that Play a Role in Choosing a Bank
33B Katherine Eastham: An Examination of the Effectiveness of Communication Methods to Geographically Dispersed Members of an Organization
33C Kat Storwick: Support and Recognition at a Family-Owned Firm
33D Samantha Trestik: An Exploration of Contributing Factors in Selecting a Retreat Venue amongst College-Aged Students

Session 34: 1:30 - 2:45 pm **Room 241 College Hall**
EMPIRICAL APPROACHES TO HUMAN BEHAVIOR II
Faculty Moderator: Gary Thorne, Gonzaga University

34A Marisa Crisostomo and David Sheppard: Stressing Out the Stressed Out
34B Amanda Marie-Shyne Dawson: The Effects of Spacing Task Difficulty on Problem-Solving
34C Haeley Meyer and Lauren Stemper: Task-Switching, Tension, and Creative Problem Solving
34D Amelia Mills: Who Will Help Me? The Effect of Gender on Helpfulness
34E Elisabeth Kornberg and Erin Underbrink: Risky Business

Session 35: 1:30 - 2:45 pm **Room 242 College Hall**
SOLVING PROBLEMS IN THE DEVELOPING WORLD
Faculty Moderator: Annie Voy, Gonzaga University

35A John Emery: The Paradox of Haitian Poverty
35B Parker Townley: Violence in the Streets: A Comparative Study of the Rise of Organized Crime in El Salvador and Nicaragua
35C Marija Vareikate: Hunger in the developing world: Unstoppable burden or solvable problem?
35D Joshua Willmore: Lessons from a Local Government in Costa Rica

Session 36: 1:30 - 2:45 pm **Room 245 College Hall**
APPLIED MATERIALS DEVELOPMENT AND CHARACTERIZATION
Faculty Moderator: Eric Ross, Gonzaga University

36A Bryce Kanter: Chromatographic Evaluation of Ion-Membrane Affinity with Stöber Silica Supported Bilayers
36B Joshua Mirabdolbaghi: Electrospinning of Copolymers for Fabrication of Alternative Synthetic Prothesis
36C Carly Centeio: Removal of Fluoride from Water Using Bone Char

Session 37: 1:30 - 2:45 pm **Magnuson Theatre Stage**
PERSPECTIVES ON HUMAN NEEDS, AUTHENTICITY AND COPING
Faculty Moderator: Stephanie Lindsay, Gonzaga University

37A Joshua Garcia: Narrative, Authenticity and the Self
37B Molly Anderson and Diana Petrin: Spirituality and Hope in Relation to Coping Styles
37C Madeline Nolan: Physically Researching Maslow's Hierarchy of Needs

Session 38: 3:00 – 4:15 pm **Room 128 College Hall**
SYNTHESIS AND CHARACTERIZATION OF DRUGS
Faculty Moderator: Matt Cremeens, Gonzaga University

38A Elizabeth Wehner: Characterization of Designer Drugs
38B Emily Engerman: Synthesis of 4,6-diamino-2-(sulfamoylamino)pryrimidine
38C Katherine Schwenne: Tautomers and Drugs
38D Samantha Blake: Synthetic Design and Characterization of 3,4-methylenedioxymethamphetamine

Session 39: 3:00 – 4:15 pm **Room 130 College Hall**
SOCIOLOGY OF HEALTH AND WELLNESS
Faculty Moderator: Andrea Bertotti-Metoyer, Gonzaga University

39A Kaitlin Asson and Jake Kelly: Franken Plants: An Analysis of Why the Labeling of Genetically Modified Organisms is Not Required
39B Andrew Cataldo: The Blame Game: Obesity and Perceptions of Responsibility
39C Sinead Christensen & Paige Teichmann: Getting Active!: A Program Evaluation of Implemented Physical Activity at Recess
39D Peter Froese: Fatty Boom Batty: Cultural Cues and Legislative Hogwash

Session 40: 3:00 – 4:15 pm **Room 132 College Hall**
U.S. AND INTERNATIONAL POLICY AND LAW
Faculty Moderator: Sean Swan, Gonzaga University

40A Nicholas Halliburton: Wikileaks and Free Speech
40B Jesse Javana: Conflict of Interest: Comparative Monetary Policies
40C Amanda Ramey: Space Law: The Final Frontier
40D E.B. Vodde: Still an American: Citizenship and Due Process in a Global Warzone

Session 41: 3:00 – 4:15 pm **Room 133 College Hall**
STRATIFICATION AND INEQUALITY
Faculty Moderator: Marguerite Marin, Gonzaga University

41A Jessica Luebbering: On the Fence: College Students' Perceptions of Illegal Immigration
41B Ashley Martin: Housing for All
41C Angeles Solis: The Latino Migrant Worker in our Nation; The Public Health Consequences of Acculturation through a Marxist Lens

Session 42: 3:00 – 4:15 pm **Room 135 College Hall**
TOPICS IN PHILOSOPHY
Faculty Moderator: Caroline Fu, Gonzaga University

42A Nathan Smith: Truth-Bearers
42B Kylie Hannas: Nietzsche's Views on Embracement of the Enemy in Relation to Richard Wagner
42C Paul Ojennus: Modeling the Aesthetic Axis of Information Organization Frameworks

Session 43: 3:00 – 4:15 pm Room 137 College Hall
FUNCTIONS AND MATHEMATICAL MODELS
Faculty Moderator: Gail Nord, Gonzaga University

43A Cullen Grow and Andrew Ritchie: Collatz Function Variations of the Form x+c
43B Branden Lowe: A Mathematical Model of the Rare Prion Disease Fatal Familial Insomnia
43C John Rinehart: Lie Algebras from a Physics Perspective
43D Sarah Whittemore: A Mathematical Model of Stress-Induced Insomnia

Session 44: 3:00 – 4:15 pm Room 203 College Hall
THE SOCIAL NETWORK: THE EFFECTIVENESS OF SOCIAL MEDIA TOOLS
Faculty Moderator: Mirjeta Beqiri, Gonzaga University

44A Molly Ferree: How Social Media and E-mail Recruitment Tactics Affect Undergraduate Interest in Private Universities
44B Rebeka Lampe: The Effectiveness of the Indirect Promotion on Consumers on Pinterest
44C Crystal Nelson: The Effectiveness of Using Facebook Event Invitations to Influence Event Attendance of Traditional-Age University Students
44D Gilbert Sandoval: How Facebook Can be a College-Aged Student's Number One Source for Worldly Information

Session 45: 3:00 – 4:15 pm Room 237 College Hall
THE ECONOMICS OF WAGES, CRISES AND ATHLETICS
Faculty Moderator: Erica Johnson, Gonzaga University

45A Matthew Grover: College Football Scandals and Athletic Giving
45B Nigel McClung: Exploring the Causes of the 1994 Mexican Peso Crisis
45C Kylen Stevenson: An Analysis of Quarterback Prospects in the NFL by Wonderlic Results.
45D Daniel Seubert: Benefits of Graduation on NFL Salary

Session 46: 3:00 – 4:15 pm Room 239 College Hall
WOMEN IN PHOTOGRAPHY
Faculty Moderator: Meredith Shimizu, Whitworth University

46A Allison Schiesser: Body of Neshat
46B Jill Smith: Tina Modotti: Through the Eyes of the Other
46C Sarah Scoon: "Faces I Could Not Pass By": Margaret Bourke-White's Documentation of Human Suffering

Session 47: 3:00 – 4:15 pm Room 241 College Hall
HISTORY, CULT and CULTURE
Faculty Moderator: David Oosterhuis, Gonzaga University

47A Leah Marley: The Mythology, Practices and Archaeology of the Cult of Asclepius
47B Monica Stenzel: Witches' Black Sabbaths & Other Perversions of the Sacraments in Early Modern Britain
47C Anthony Austin-Walker: The Road that Led to a Slave Society: The Rising Slave Population During the Roman Republic that Induced a Slave Dependent Civilization, 509-27 B.C.

Session 48: 3:00 – 4:15 pm Room 242 College Hall
THE PERSONAL EFFECTS OF DISCRIMINATION
Faculty Moderator: Amani El-Alayli, Eastern Washington University

48A Matthew Johansen and Ty Finkas: "What Was Your Name Again?" Are Muslims Treated Differently When Seeking Housing?
48B Andrew McCall: Experiencing Discrimination: Stronger Group Identification among Multiple Minority Group Members
48C Wyatt O'Dell and Chelsea Joynes: The Effects of Discrimination on Trait Reactance: A Study from the Thesis of Nathaniel S. Wareham

Session 49.1: 3:00 – 4:15 pm Room 424 College Hall
AFTERNOON POSTER SESSION 1
Faculty Moderator: Christy Watson, Gonzaga University

49.1A Elizabeth Anderson: The Children of Roatan Honduras
49.1B Evan Anderson: The Effects of Contingent Rewards on the Decrease of Improper Verbalizations of Middle School Students with Learning Disabilities
49.1C Brianna Armstrong: The Effects of Using Augmentative and Alternative Communication to Teach a Preschool Student with Developmental Delays to Respond and Request Appropriately
49.1D Megan Baker: The Effect of Direct Instruction Flashcard Procedure on Mastery of Basic Sight Words by an Elementary School Student with a Behavior Disorder
49.1E Peter Balholm and Travis Taylor: The Pend Oreille Fold and Thrust Belt

49.1F Sarah Bechtoldt: The Effects of Direct Instruction Flashcards and a Model, Lead, Test Procedure on Letter Recognition for Three Preschool Students with Documented Developmental Delays
49.1G Allyson Binversie and Jenna Lochner: Chimpanzee Sound Production
49.1H Tyler Bland: Confirmation of the Presence of the Hepatocyte Growth Factor Receptor (HGF) Gene in Rat Hippocampal Tissue
49.1I Laura Bulkley: The Effects of a Model, Lead, and Test Procedure to Teach Letter Name and Sound Identification to Elementary School Students with Learning Disabilities
49.1J Arlana Byers: An Analysis of the Reinforcing Value of Cigarettes and e-cigarettes among Nicotine-dependent Cigarette Smokers Using the Multiple Choice Procedure: A Gender Comparison Study
49.1K Anna Chandler: The Differential Effects of Direct Instruction Flashcards and Math Racetrack to Teach Numeral Identification with Two Preschool Students with Developmental Delays
49.1L Taylor Colvin, Rachel Rosedale and Tanya Tjoelker: Gait in Children with Cerebral Palsy Before and After an Equine-assisted Therapy Session Compared to Gait in Non-cerebral Palsy Children
49.1M Marshall Davis: Cracking the Claw: Analysis of Morphological Traits and Wave Energetics in Fiddler Crabs
49.1N Derek Ellis: Emotional Regulation and Time Perception
49.1O Marcus Eschelbach: Local Environmental Knowledge on South Caicos, Turks and Caicos British West Indies
49.1P Christopher Galeucia: The Use and Frequency of Pointing in Cross-Fostered Chimpanzees
49.1Q Sam Gordon: Reduced Statin Inhibition as Evidence for Characterization of Class II Bacterial HMGR
49.1R Phillip Inouye and Erick Huntley: Classification of Gluten-Free Beer by Headspace Solid Phase Microextraction and High Performance Liquid Chromatography
49.1S Konner Jackson: Inhibition and Crystallization of β-Carbonic Anhydrase
49.1T Tom Kang: Method Development for Aroma Profiles of Volatiles Produced in the Fermentation of Gluten-Free Beverages

Session 49.2: 3:00 – 4:15 pm Room 427 College Hall
AFTERNOON POSTER SESSION 2
Faculty Moderator: Christy Watson, Gonzaga University

49.2A Joseph Belke: Phagocytotic Tendencies in *Tetrahymena pyriformis*
49.2B John Henderson, Ellie Toscan, Mariah Minder and Ashley Connors: The Discovery and Isolation of Four Novel Bacteriophages
49.2C Joshua Kellems: Free Speech and the Internet
49.2D Dave Lee and Erin Lapsansky: The Bioinformatics of the Bacteriophage Sisi Genome
49.2E Katlin Lund: The Effects of Flashcards and Math Racetrack on Multiplication Facts for Two Elementary Students with Learning Disabilities
49.2F Colleen Meyers, Rebeccah Talboy, Devon Lilley and Alyson Lykken: The Effects of the Direct Instruction Flashcard Procedure on Mastery of Multiplication Facts by Two At-Risk Elementary Students
49.2G Alyssa Miller: Effects of Culture on Morality and Disgust
49.2H Kathleen Nollenberger: Examining the Beliefs and Values of Education, Literacy, and Achievement in a Multicultural Immigrant Community in the US: Action Research to Create a Culturally Responsive Family Literacy Program
49.2I Jennifer Odegard: Studies of Strain Dependent Antibacterial Activity of Peptides
49.2J Jenna Peterson: Histology of Anurian Integument in the Detection of Bd
49.2K Gabrielle Rivera and Kalli Heric: The Effects of the Direct Instruction Multiplication Flashcard and the Math Racetrack Procedures on Mastery of Multiplication Facts by an At-Risk 6th-Grade Girl
49.2L Liliya Rudneva: Effects of a Girl's Relationship with her Father in Childhood on her Choice of Intimate Partners in Adult Life
49.2M Katherine Shaw: The Effects of Using Contingent Rewards to Teach A First-Grade Student with Autism to Decrease Off-Task Behaviors During Non-Preferred Activities
49.2N Elena Skornyakov: Reliability and Internal Consistency of ABC Scale
49.2O Matt Smith: Detecting Rapidly Interconverting, Isotopically Edited Enol Tautomers by IR Spectroscopy
49.2P Ryan Stahler: The Determination of Riboflavin in Vitamin Tablets by Fluorescence Spectroscopy
49.2Q Emalia Steele and Sarah Milburn: The Effects of Model/Lead/Test and Math Racetrack on Rational Counting by a 5-Year-Old Boy with Developmental Delays
49.2R Kyle Stumetz and Jason Nadeau: Excited State Reaction Dynamics in High-Energy Cyclopropanone and Epoxide Ring Expansions
49.2S Michael Weidemann, Stephen Cooper, Hahn Nguyen and Jessica Pearson: Celiac Disease and Gluten Sensitivity: Searching for a Therapy through Computer Modeling
49.2T Will Wilde, Alyssa Logan, Jack Chase and Mackenzie Bredereck: Don't Hate, Annotate: Annotation of the Genome of Mycobacteriophage SiSi
49.2U Sarah Yeend and Olivia Schuele: Diversity in Bacteriophage

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The 2012 Spokane Intercollegiate Research Conference
was planned by the following faculty and staff:
Vesta Coufal, Gonzaga University
Caroline Fu, Gonzaga University
Vikas Gumbhir, Gonzaga University
Fred Johnson, Whitworth University
Shannon Overbay, Gonzaga University
Eric Ross, Gonzaga University
Patricia Terry, Gonzaga University
Christy Watson, Gonzaga University
Jeff Watson, Gonzaga University
Carolyn von Muller, Gonzaga University

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Gonzaga University's Department of Marketing and Communications
Gonzaga University's Department of Creative Services

SPOKANE INTERCOLLEGIATE RESEARCH CONFERENCE
April 21, 2012 —– Gonzaga University
SESSION SUMMARIES

Session 1: EDUCATION AND WRITING

Faculty Moderator: John Eliason, Gonzaga University

1A Teaching Originality in Freshman-Level Research Papers

Daniel Fladager

Strategies for the cultivation of originality in expository theses are noticeably absent from most popular writing and style guides. This project will focus on strategies for teaching students how to develop original theses in expository essays, especially the freshman-level composition research paper. Drawing on psychological and pedagogical theories as well as surveys and interviews of students and professors of English 101 classes and writing center attendees and tutors, this project will strive to show that originality in expository essays is a teachable trait that can be developed in a student.

Faculty Sponsor: John Eliason, Gonzaga University

1B Middle Eastern History and Why It Should be Taught More Thoroughly in High Schools

Aman Kaur

James W. Loewen's critical analysis of high school history textbooks in "Lies My Teacher Told Me: Everything Your American History Textbook Got Wrong," tunes in on erroneous American history curricula and instigates further probing of history curricula offered to teenagers under a micro lens; only this time, it is about middle eastern history, or the lack there-of, and the correlation it has with embedding ignorance later in the lives of individuals about the region's people, traditions, and ideologies. Without concise introductions to middle eastern history in classrooms, individuals resort to non-scholarly sources for information, or most often presented as half-truths, which threaten the United States'renowned "melting pot" status and, instead, categorizes the nation as more primitive than progressive in terms of acceptance. Introducing historical studies of the Middle East in high schools will create better fundamental understandings and help eliminate a lot of ignorance fueled by current events.

Faculty Sponsor: Amanda Maule, Eastern Washington University

1C Authenticity in Personal Narrative: Recognizing the 'Other'

Maryssa Thompson

Authenticity in Personal Narrative: Recognizing the 'Other': I will present research about creating authentic voice in writing using vulnerability. My research will show that to write in a way that will appear most authentic to others requires recognizing a level of vulnerability within oneself. This research is valuable because it establishes a connection between the way we perceive ourselves and interpret memory and the stories of others.

Faculty Sponsor: John Eliason, Gonzaga University

Session 2: SOCIOLOGY OF SPORT

Faculty Moderator: Nicole Willms, Gonzaga University

2A Chasing the Jersey: The Impact of Athletic Celebrity on Personal Relationships

Brandon Barberio

The student athletes that play on NCAA Division I men's teams, especially football and basketball, have become celebrities in the eyes of the nation and their peers, both on and off the field. Previous studies have examined college athletes in relation to academics, business, marketing, and even alcohol consumption, but few have analyzed how athletes fit into their university community as celebrities. This project will investigate the relationships that college communities have with student athletes and how they are seen as students, peers, athletes, and, above all, as celebrities. This study will be conducted at Inland University - a small, private, Catholic university in the northwest. Using in-depth interviews with the university's athletes as well as students who have personal relationships with them, this research will examine the intricacies of these relationships with emphasis on how both actors' perceptions of athletic celebrity affect the dynamics and structure of the relationship.

Faculty Sponsor: Vikas Gumbhir, Gonzaga University

2B Beers, Cheers, and Violent Jeers; Gender and Sports Bar Behavior

Rachel Goodrich

Gender is something we do; it is a routine accomplishment that varies within different contexts, with men often maintaining dominance of the space. In the sports bar realm, research has shown that there is a specific acceptable masculine identity. Conversely, both male and female sports fans have the same motivations to watch sports (James and Ridinger 2002). This study examined the way that men express their masculinity in the context of the bar, as well as how women express their femininity (or sometimes pick up a masculine identity), in a masculine-centered space. Using participant observation at several sports bars, I evaluated the gendered norms of sports bar behavior in Spokane, WA. Ultimately, this research provides a thorough analysis of the behavior of fans in sports bars in order to establish the specific gendered culture of the sports bar and the effect it has on masculine and feminine behavior.

Faculty Sponsor: Vikas Gumbhir, Gonzaga University

2C Culture and Status in College Sports

James Partee and Casey Ames

This ethnography of the Men's soccer team at a Catholic liberal arts university in the Pacific Northwest will describe what the Men's soccer team goes through that the public does not see, such as fitness sessions, training sessions, community service, etc. It will describe some of the key individuals and how all the training sessions fit in as a whole on the Men's soccer team.

Faculty Sponsor: Vikas Gumbhir, Gonzaga University

Session 3: THE COLLEGE-AGED CONSUMER

Faculty Moderator: Ryan Herzog, Gonzaga University

3A The Use of Color in the Retention of Information in Print Advertisements Among College Students

Kelsey Bacon

Many advertisers focus on content, pictures and information to sell the product, but the use of color is also an important aspect of print advertisements. The meaning of colors is culturally specific and change over time, thus what we knew twenty years ago may not be accurate today. Understanding how certain colors grab a viewer's attention is important, but even further; advertisers need to know if colors help in the retention of the important information. By retaining the information at a glance, the consumers are more likely to buy the product in the near future. College age students (18-23) were surveyed after walking past flyers on the wall (or handed to them) and asked to recall as much as they could about it. The colors were changed on the flyer, but everything else stayed the same and neutral wording and fonts were used.

Faculty Sponsor: Brad Sago, Whitworth University

3B Collegiate Coupon Clipping: Thriving or Diving?

Kara Heatherly

There are approximately 19 million students enrolled in colleges and universities in the United States alone in 2012. The median annual income of those students is far below the national average. Statistics show that the financially disadvantaged demographic is more likely to shop sales and utilize coupons. Does this hold true for the college students who make up a large portion of that population? If so, what are their motives for coupon clipping? And if not, what is it that holds them back from such options? A survey of college students was conducted addressing these questions in order that we might find both better ways to market to the college demographic and more efficient uses of our organizations' valuable resources.

Faculty Sponsor: Brad Sago, Whitworth University

3C Do Customers Respond Differently to Short and Long-term Promotional Offers?

Lindsay Jones

When promoting a product or service for a discounted price, businesses often limit the time the product is on sale. Are consumers more likely to purchase an item if they know that the promotion ends soon compared to a longer duration of the promotion? Are consumers aware of short term versus long term promotional offers? In this marketing research, the issue examined was if there was a difference or correlation in customers buying between the short term and long term. The impact of how the buyer feels after short and long term purchases was also analyzed. A written questionnaire was conducted to identify if the duration of a sale impacts a purchase or non-purchase. College students ages 19-23 were questioned, the results evaluated and analyzed.

Faculty Sponsor: Brad Sago, Whitworth University

3D How Spokespeople for Cosmetic Brands Influence Purchasing Behavior among College-Age Women

Kelsie Raunio

The cosmetic industry has been found to generate $45 to $66 billion worldwide, and has some American women spending an average of $12,000 annually on beauty products and grooming. This research explored the effectiveness of using spokespeople to sell cosmetics. Does the CoverGirl brand really attract more consumers because of "CoverGirls" like Taylor Swift and Drew Barrymore? Or can equally popular brands like Maybelline New York fare just as well in the cosmetic industry without celebrity spokespeople? Since the cosmetic industry is where women spend a large portion of their income, cosmetic brands would benefit from knowing if spokespeople actually play a persuading factor in the purchasing behavior of women. A questionnaire was given to college women ages 18 to24 who frequently purchase cosmetics to identify if spokespeople had an effect on their final purchasing decision.

Faculty Sponsor: Brad Sago, Whitworth University

Session 4: GENERAL BIOLOGY I

Faculty Moderator: Marianne Poxleitner, Gonzaga University

4A Isolating Novel Mycobacteriophages

Zach Damby

Bacteriophages are viruses that infect bacteria. They are the most abundant organisms on Earth and are everywhere bacteria are found. They have recently been the subject of scientific interest due to their abundance and diversity. Each member of our lab collected soil samples from various locations in Spokane, WA, and asked the question: can I isolate a novel phage that infects the soil bacterium *Mycobacterium smegmatis*? Enrichment and purification techniques were used to isolate phage from the soil and observe plaque morphology. DNA restriction digest patterns and electron microscopy were used to determine if the phage were novel. We determined that all 16 of the isolated phage were novel with a few possible exceptions.

Faculty Sponsors: Marianne Poxleitner and Kirk Anders, Gonzaga University

4B Determining Cluster Identification of Newly Discovered Bacteriophage

Emily Carlson

Mycobacteriophages, commonly called phages, are viruses that infect mycobacteria. Phages reproduce quickly and are numerous. Different bacteriophage have been discovered and can be grouped into distinct clusters. These clusters are determined by similarities in DNA sequence. Phages in the same cluster share many qualities but are still unique. Our research group isolated sixteen phages and wished to determine their cluster type. PCR was used to determine relatedness between phages using cluster-specific PCR primers. An amplified band of DNA, seen through electrophoresis on an agarose gel, indicated a positive cluster identification. One phage, Sisi, was sequenced and was cluster-typed by sequencing the genome. We were able to make several cluster identifications, which adds to our knowledge of the diversity of the phages that we found.

Faculty Sponsors: Marianne Poxleitner and Kirk Anders, Gonzaga University

4C Enumerating Arsenic-Reducing Bacteria in Sediment

Jack Dunbar

Dissimilatory arsenate-reducing bacteria (DARB) mobilize arsenic into the water column by reducing As6+ to As3+. Enumerating sedimentary DARB may determine the extent to which this metabolism poses a hazard in recreational waters like Lake Coeur d'Alene and the Spokane River. The purpose of this study was to compare a most probable number (MPN) assay for DARB with acridine orange direct counts (AODC) of Shewanella strain ANA-3. Cultures were grown in sealed tubes containing an anaerobic medium with arsenate as the electron acceptor. Replicate MPN assays were sacrificed weekly to determine the MPN as a function of time. As6+ reduction was determined using a sulfide precipitation assay. The MPN counts showed a linear increase with a final concentration of 2.3x104 cells ml-1 after four weeks. The AODC concentration was 9.26x106 cell ml-1. These results suggest that further incubation may result in a more accurate determination of DARB numbers in a sample.

Faculty Sponsor: Frank Caccavo, Whitworth University

4D Isolation and Sequencing of Whole Chloroplast Genomes from Erythroxylum

Andrew Wilson

In plants and algae, chloroplasts contain circular chromosomes distinct from nuclear DNA. Differences in these genomes can be used to investigate evolutionary relationships of genera, and species within genera. In this research, chloroplasts from E. confusum were isolated via centrifugation, amplified by rolling circle amplification, and sequenced using pyrosequencing. The 35 resulting contiguous sequences were assembled and the genome is currently being finished using PCR. The genome will be annotated using the bioinformatics software DNA Master. Once complete, this process will be repeated for chloroplasts from E. coca. The resulting genomes will provide meaningful molecular data for phylogenetic comparison between species in the Erythroxylum family.

Faculty Sponsor: Marianne Poxleitner, Gonzaga University

Session 5: ANONYMOUS

Faculty Moderator: Sean Swan, Gonzaga University

5A Legal Responses to Anonymous

Austin Rogers

The presentation will cover the legal issues revolving around the group Anonymous. It will focus on the recent actions taken by the group and cover their agenda of free Internet use as well as the responses of the corresponding legal entity. This paper will focus on the issues of censorship and the consequences for Anonymous and its sympathizers when the legal system takes aim at it. Specific cases that will be looked at will be the BART protests, Channology, and the links with the wikileaks and Mexican drug cartel extradition issues.

Faculty Sponsor: Sean Swan, Gonzaga University

5B Anonymous: The Power of an Idea

Dustin Phillips

The idea behind Anonymous has existed long before the movement began, but it is starting to manifest itself in a more pragmatic form that can be identified by the Guy Fawkes mask. Nevertheless, the exact underlying idea is hard to isolate, because it spreads through social interaction, self-replicating, and mutating along the way, taking many different forms. Thus, Anonymous can be classified as a meme. There is no hierarchy, manifesto, or formal membership to organize the movement. This has become known as horizontalism. The research will examine: the “meme” under the scope of a social movement, the costs and benefits of horizontalism, and the future implications of this movement. Researching their communication, secrecy, and operations will provide great insight into the movement. The development of this movement could be an indicator of the impact that technology and horizontalism may have on the future.

Faculty Sponsor: Sean Swan, Gonzaga University

5C Identifying Anonymous

Jackie Pittaway

Few understand the nature of Anonymous. It is difficult to find any commonality among a group that has no leadership, no rules and no loyalty to anything other than mission to protect the free flow of information. A group such as Anonymous has never existed before, they take activism beyond protesting and petitions. They use Low Orbit Ion Cannon attacks to bring down corporate and government websites. Anonymous is a new phenomenon in which collectives of individuals have the power to hold corporations and governments responsible for their actions through civil disobedience. My research examines their code of ethics, the motivation behind their operations and what, exactly, Anonymous is. It is important to understand Anonymous because Anonymous operations have successfully manipulated corporations into changing their policy. The targets and operations of Anonymous are often indicative of emerging issues originating from the open and unrestrained nature of the internet.

Faculty Sponsor: Sean Swan, Gonzaga University

5D Anonymous: Project Chanology

Richard Redford

The primary focus of my project will concern the group known as Anonymous. I will specifically examine the ongoing conflict between Anonymous and the Church of Scientology known as Project Chanology. My project will give a brief overview of both Anonymous and the Church of Scientology. I will explain the origin of Project Chanology and evaluate its impact upon the Church of Scientology. I will specifically consider how Project Chanology has affected the churches public relations. Moreover, I will examine the ethics of Project Chanology and whether the right of free speech provided by the First Amendment protects the actions of the group Anonymous.

Faculty Sponsor: Sean Swan, Gonzaga University

Session 6: LITERATURE AND ITS CONTEXTS

Faculty Moderator: Ben Semple, Gonzaga University

6A The Exemplary Genre of the 18th Century in France: The Epistolary Novel

Monika Cetnarowski

Translated from the author's original work in French, the essay discusses why this new literary genre, the epistolary novel, emerged in France during the eighteenth century. The author asserts that the roman épistolaire offered a way to satisfy the need to express reality through the eyes of the individual during a century of major political, philosophical, and social change. Using excerpts from Montesquieu's novel, Lettres Persanes, written in 1721, the author illustrates how the use of the letter and direct correspondence allows a subjective, as well as objective approach to providing social commentary and criticism of the pre-revolutionary society. This essay details how the epistolary novel is an exemplary genre that reflects the zeitgeist of such a transitional historical period in France.

Faculty Sponsor: Bendi Benson Schrambach, Whitworth University

6B The Passage from Oral Tradition to Written Literature in Medieval France

Sarah Gambell

This presentation covers the first emergences of written literature seen in Europe, specifically in France. Traveling through the historical background of modern written literature to its first sightings in France, we will see how oral tradition, or the art of telling histories to an audience by jongleurs and troubadours, had a direct and profound effect upon early literature. The presentation also utilizes texts from the same time period, those of early Occitan poets and the works of Marguerite de Navarre and Chretien de Troyes, and analyzes their similarities to oral works. Finally we will see how this passage from orality to written literature directly affected the lives of those in Medieval France.

Faculty Sponsor: Jennifer Brown, Whitworth University

6C The Ontology of Macbeth: Foreknowledge, Necessity, and Implications

Bridger Landle

In this essay, entitled "The Ontology of Macbeth: Foreknowledge, Necessity, and Implications," I seek to examine the philosophical and social consequences for the temporal ontology described in Shakespeare's Macbeth, particularly through the events foretold by the Weird Sisters, for the ascension of Elizabeth I. I argue that the metaphysical outlook Shakespeare presents in Macbeth questions the legitimacy of Elizabeth's reign. In justifying my argument, I examine briefly the events leading up to Elizabeth's ascent to the throne, as well as the Tudor Myth in general, while remaining careful to take relevant biographical details-Shakespeare's patronage with James, his own possible views, and the threat of censorship-into consideration.

Faculty Sponsor: Doug Sugano, Whitworth University

6D Focus or Omission: Mansfield Park Film Adaptations Take on Slavery

Ruth Nalty

Jane Austen briefly references the prevalent slave trade of her day in only one of her novels: Mansfield Park. Film adapters, Patrica Rozema(1999 version) and Ian MacDonald (2007 version), thus had to make the choice of how to include or omit the touchy subject of slavery in their films. Although the slave trade only gets a brief mention in the novel, slavery is a major motif in this work and is depicted in how the heroine, Fanny Price, is treated. The post-colonialist reading by Edward Said of Mansfield Park is taken into account as it has helped to shape the discourse surrounding this novel and its film adaptations. Both films point to how Austen subtly, respectfully and without any didactic voice brought a very controversial issue of her day "to the table" for her readers to ponder, and that authorial legacy continues today.

Faculty Sponsor: Laura Bloxham, Whitworth University

Session 7: TESTING METHODS IN ENGINEERING AND COMPUTER SCIENCE

Faculty Moderator: Vesta Coufal, Gonzaga University

7A Research and ICP Testing of Electroplating Bath Chemistry

Robert Patrick McCarthy

Spokane Metal Finishing, located in Spokane, Washington, is a metal finishing application facility owned by Kim Deganstein. The shop repairs and plates various types of metal coatings from a variety of sources (cars, door handles, bolts, etc.); the types of coatings include copper, chromium and nickel. During one stage of the process, Kim submerges the metal specimen in an electroplating bath solution with heavy amounts of whatever metal he wishes, resulting in the specimen being completely coated with the particular metal that was in the solution. Kim was curious to see if a particle-analyzing method was possible to study materials and solutions involved in the electroplating process. Dr. Pat Ferro and I obtained some electroplating bath samples for testing at the ICP (inductively-coupled plasma) spectrometer located in Hughes Hall. We obtained reports of element quantities and their abundance in the sample.

Faculty Sponsor: Patrick Ferro, Gonzaga University

7B Flexural Bond Strength of Saturated Masonry Prisms

Jessica Monroe, Ryan Matthis

This project concerns the strength of masonry. Though sufficient research has been done to show that the compressive strength of masonry structures is significantly affected by moisture content and mortar composition, no research has examined the impacts of saturation on masonry flexural bond strength. This project sought to determine if saturation influences flexural strength. Forty six-brick prisms were constructed by a certified mason and a bond wrench and test protocol were developed per ASTM C1072. Twenty prisms were constructed using Type N mortar and twenty were constructed with Type S, two of the most commonly used mortars. Ten prisms of each mortar type were submerged in water 24 hours prior to testing at fourteen and twenty-eight days after construction. The remaining prisms were tested without being saturated and the results were compared.

Faculty Sponsor: Sara Ganzerli, Gonzaga University

7C PowerStorm: An Eco-Visualization Tool for Reducing Electricity Consumption on Small College Campuses

Patrick Yoho

An eco-visualization (EV) is an interactive device targeted at revealing energy use in order to promote sustainable behaviors or foster positive attitudes towards sustainable practices. EVs have evolved out of other eco-feedback technologies that environmental psychologists have developed in order to help cultivate sustainable behaviors. Over the past 40 years, EVs and their predecessors have shown the ability to reduce electricity consumption by around 10 percent in residential homes. However, studies of this technology's application to other types of dwellings are not extensive. This study outlines the design and testing methodology for an EV that is to be implemented in college dormitories at Whitworth University in early 2012.

Faculty Sponsor: Susan Mabry, Whitworth University

Session 8: ECONOMICS AND ITS IMPACTS

Faculty Moderator: John Beck, Gonzaga University

8A The Magic of Property Rights

Natasha Black

Property rights are the tools facilitating economic growth. If one has legal ownership to use one's valuable assets for investment, one strives at maximizing the usage of such assets. This paper examines the impact of property rights on the US economy and society. Particularly, two examples drawn from the 1990s are addressed in this paper. First, rent control demonstrates the negative repercussions when property rights are not allowed to function. When government regulates what rent landowners can charge their tenants, incentives to maximize assets are reduced. When supply and demand are restricted from determining the price, chaos ensues. Second, deregulation could develop a more efficient property rights system. The telecommunications sector was practically under a monopolistic structure up through the 1990s, but after government deregulation took place, new companies entered the market. The development of property rights led to an explosion of growth and innovation resulting in lower prices and greater options.

Faculty Sponsor: Karla Morgan, Whitworth University

8B What is so Super about Living near a Superfund Site?

Julia Hubbard

This study will investigate whether race is correlated with the location of superfund sites in terms of county. A Superfund site, according to the EPA, is the name assigned to an 'environmental program established to address abandoned hazardous waste sites.' Social justice in terms of minorities continues to plague the US and sometimes it is easy to overlook its extent, especially in terms of the environment. By looking at the placement of superfunds in relation to demographics, we can observe whether a correlation might indicate injustice and help us to understand inequalities that minorities are facing.

Faculty Sponsor: Erica Johnson, Gonzaga University

8C 2007 Housing Bubble

Christian Klein

In 2007 The United States experienced the bursting of a housing bubble. Almost nine months later the country was suffering from the 2008 financial crisis; and the economy quickly sunk into a depression. Congressional officials quickly responded by drafting new legislation to "prevent" the next crisis. There is one important question we must consider. Could the housing bubble of 2007 be caused by adversely altered consumer incentives? This paper uses economic data and statistics to investigate the correlation between government policies and key consumer's incentives in the market. The findings in this paper provide evidence that the United States federal government did in fact negatively alter consumer incentives which may have contributed significantly to the 2007 housing bubble.

Faculty Sponsor: Karla Morgan, Whitworth University

8D Integrating Computer Science into K-12 Classrooms

Daniel Shetler

Currently the United States is failing to prepare its high school students to face the technological job market of the 21st century. Whereas other countries, such as Israel, are seeing large technology growth in their economies largely due to computer science curriculum being implemented into their high school education. For the future success of the United States economy in a digital society, it is imperative that each state integrate computer science curriculum into its K-12 educational system. However this is easier said than done, and four overarching issues must first be overcome: curriculum development, teacher preparation, implementation, and long-term sustainability. In response to these issues Washington State will be used as the primary focus in this report, but the ideas can and should be transferred to other state educational systems.

Faculty Sponsor: Susan Mabry, Whitworth University

Session 9: EXPLORING METABOLIC PATHWAYS

Faculty Moderator: Jennifer Shepherd, Gonzaga University

9A Exploring the Metabolic Role of *Burkholderia cenocepacia* HMGR

Joe Driver

3-hydroxy-3-methylglutaryl coenzyme A reductase (HMGR) catalyzes the rate limiting step of the mevalonate pathway for the biosynthesis of isoprenoids. Certain species of bacteria, such as *Staphylococcus aureus*, which lack HMGR cannot survive. HMGR therefore poses as a potential target for novel antibacterial agents. *Burkholderia cenocepacia* is an opportunistic pathogen that is naturally resistant to most antibiotics and commonly infects cystic fibrosis patients. Infection with this bacterium results in a poor prognosis for CF patients. The gene for HMGR from *Burkholderia cenocepacia* has been synthesized, ligated into a pET-45b(+) expression vector, and overexpressed in *E. coli*. The enzyme has been purified using FPLC, and kinetic studies have confirmed enzymatic activity in the oxidative direction. Bioinformatics approaches have verified that *Burkholderia cenocepacia* lacks the other enzymes for the mevalonate pathway and likely functions in an as-of-yet undetermined metabolic pathway. Current studies include a targeted gene knockout of HMGR in *Burkholderia cenocepacia*.

Faculty Sponsor: Jeff Watson, Gonzaga University

9B Screening of Rhodoquinone Biosynthetic Gene Targets Using R. rubrum Deletion Mutants and Characterization of Gene Products

Fernando Rodriguez Perez

Screening of Rhodoquinone Biosynthetic Gene Targets Using R. rubrum Deletion Mutants and Characterization of Gene Products.

Faculty Sponsor: Jennifer Shepherd, Gonzaga University

9C Elucidation of Genes Responsible for Amidotransferase Step in RQ Biosynthesis

Nicolas Contreras

Parasitic helminthes infect over 300 million people globally each year. Although antihelminthic drugs exist, many are non-specific and drug resistance is feared. Helminthes have the ability to alternate from an aerobic to an anaerobic metabolism when switching to a parasitic lifestyle. Alternating from aerobic to anaerobic metabolism is made possible by the synthesis of the electron carrier rhodoquinone (RQ) from its precursor ubiquinone (Q)--RQ has an amino group on the second carbon in the quinone ring instead of a methoxy group. In this study, the amidotransfrerase genes responsible for amination of the quinone ring will be identified by comparing RNA levels in Rhodospirillum rubrum grown in both aerobic and anaerobic conditions. A whole transcriptome sequence when compared to the R. rubrum DNA sequence will reveal which genes are employed in RQ synthesis and its amination step. Identification of these genes can be a useful step in developing antihelminthic drugs.

Faculty Sponsor: Jennifer Shepherd, Gonzaga University

9D Expression and Characterization of a Putative Methyltransferase Involved in Rhodoquinone Biosynthesis in Rhodospirillum rubrum

Erin Dickson

Parasitic helminths can cause devastating diseases in humans and livestock. Most of these parasites require the cofactor, rhodoquinone (RQ), for anaerobic respiration. Host organisms do not make or use RQ; instead ubiquinone (Q) is used for aerobic respiration. To study RQ biosynthesis, Rhodospirillum rubum was used as a model. Previously, it was shown that Q is an essential precursor for RQ biosynthesis. Also, an R. rubrum gene, RquA, has been identified that is required for RQ biosynthesis. Alignment and motif scanning of the predicted protein of this gene, RquA, have suggested that it is a SAM-dependent methyltransferase. In this study, we have initiated characterization of RquA and are developing assays to screen for methyltransferase activity. RquA was overexpressed in both R. rubrum and *E. coli* and purified for kinetic assays. Identifying the structure and activity of RquA could be useful for development of an antihelminthic drug to target RQ-dependent helminths.

Faculty Sponsor: Jennifer Shepherd, Gonzaga University

Session 10: BRITISH WOMEN WRITERS AND PLACE

Faculty Moderator: Michelle Smith, Whitworth University

10A British Women Writers and Place

Ana Quiring

A place's influence on its inhabitants is not new ground, and the same argument can be made about many texts. What is unique about Mrs. Dalloway is the way Virginia Woolf avoids arguing for the impact of issues (like the corruption of the London upper class or the reality of World War I) on Clarissa Dalloway's subconscious. The romance or doom imposed on the scene, and on Clarissa's life, is ultimately London that matters.

Faculty Sponsor: Pamela Copron Parker, Whitworth University

10B Jane Austen: From Anonymity to 21st Century Religion

Jacqueline De Jong

I will examine Jane Austen's biography, giving special attention to her rising fame and the time she lived in Bath, as well as provide a close reading of Northanger Abbey. Contemporary critics suggest that Austen hated life in Bath so much that it made her depressed, and her heroine's experience follows a similar trajectory. Catherine Morland leaves her country home with bright hopes of experiencing urban life in Bath. Although she attends balls and meets young men, she ultimately finds, like Austen did, that the city does not satisfy. The people in the Pump-rooms maintain a facade that Catherine never successfully adopts. The smoke and mirrors of the city, which she intended to admire, are eventually the very things to drive her home, home to the country. Austen's life and novel seem to argue that travel is a way to learn more about oneself and discover where home truly lies.

Faculty Sponsor: Pamela Copron Parker, Whitworth University

10C More than Half a Poet: Dorothy Wordsworth and the Grasmere Journal

Caroline Swinford

Dorothy Wordsworth and her writings have long been regarded in literary history and criticism primarily as a helpmeet to and source of practical detail for the Romantic poets of the Lake School, specifically her brother William Wordsworth and, to a lesser extent, Samuel Taylor Coleridge. The reputations of these two poets and their solid positions in the English literary canon have overshadowed Dorothy Wordsworth's own accomplishments and importance as a Romantic writer. While her writing cannot and ought not to be separated from her relationship with her brother, I analyze how she uses her relationship to place in her Grasmere Journal as a means of discovering and asserting her sense of identity as a legitimate and independent author. Although Dorothy Wordsworth herself ultimately fails to self-identify as an author by the admission of her own pen, the landscape that she writes of subverts this failure.

Faculty Sponsor: Pamela Copron Parker, Whitworth University

Session 11: LANGUAGE: EVOLUTION AND CULTURAL SIGNIFICANCE

Faculty Moderator: Amanda Clark, Whitworth University

11A Perceived Communication Competence among Monolinguals and Bilinguals of Bilingual Codeswitching

Monica Calderon

Spanish-English bilinguality among Latin Americans in the United States has historically been associated with lower SES and higher rates of crime. Spanish-English bilinguality among white people, on the other hand, is enjoyed as a sign of education and prestige. This study used two audio clips, identical except for moderate bilingual codeswitching in one of the clips, to measure differences in perceived level of competence between monolingual and bilingual behaviors. We surveyed about 200 monolingual and 40 bilingual individuals in middle-to-low income Mexican American dining establishments in a predominately white town in the Inland Northwest. Unfortunately, the results supported the research from the 70s. While no significant results were found to the hypotheses, there was a significant negative correlation between the perceived communicative competence of the speakers in the audio clip and the clip in which bilingual codeswitching took place.

Faculty Sponsor: Patricia Bruininks, Whitworth University

11B A Methodological Problem in the Study of the Evolution of Language: The Question of the Loss of Laryngeal Air Sacs and Humanoid Vocal Anatomy

Heather Molvik

How is the evolution of language associated with the loss of laryngeal air sacs in humans? These air sacs seem to serve a vocal function for non-human primates, so their disappearance within modern day humans is puzzling. The first step in exploring this question is to develop a method for its investigation. The soft tissue of vocal tract anatomy is lost to biodegradation; therefore the presence of air sacs must be inferred from hyoid skeletal evidence. To do this, one must unearth a proto-human hyoid and compare that to the scale of hyoids within our evolutionary line. This would make apparent where in time the loss of air sacs occurred and when the beginnings of modern speech anatomy possibly took place.

Faculty Sponsor: Michael Zukosky, Eastern Washington University

11C Reverence for the Written Word

Kyle Novak

In the 1950s the Communist regime of Mao Zedong created jian ti zi (simplified characters) in an attempt to lead China away from traditional Confucian practices. In reaction to growing up during the Cultural Revolution, Xu Bing developed an affinity for artistic expression and creative writing, understanding that language is the essence of culture. The subject of Xu Bing's avant-garde exhibitions has been studied by prominent art historians such as Merle Goldman, Michael Sullivan, and biographer Britta Erickson who completed an extensive study of Xu Bing's life. While referring to the numerous works of these scholars this paper serves to demonstrate the origins of Xu Bing's reverence for the written word, his expressed criticism of the Communist Government's simplification of writing, and how these themes are demonstrated in his 2001 installation, titled The Living Word.

Faculty Sponsor: Amanda Clark, Whitworth University

Session 12: SOCIOLOGY OF POPULAR CULTURE

Faculty Moderator: William Hayes, Gonzaga University

12A The Jersey-Junkie Effect

Brittany Clark

I will be presenting a researched case study on the effects of the reality television series, *The Jersey Shore*, on the social environment of my classmates. In my research, I have been able to correlate the classes of 2015 and 2014 alcohol-related incidents to the popularity of the reality show. This argument is supported with statistical results from the university Health and Wellness Center's Alcohol Wise survey and through the popular use of "Jersey-Shore-jargon". These two pools are both representative for the larger Y generation and reality television as a whole, and its social effect on the population.

Faculty Sponsor: Maya Zeller, Gonzaga University

12B "Female Fight Club": Gender, Raunch Comedy, and the Bridesmaids Phenomenon

Alexandra Catibayan

In terms of entertainment, women have been remarkably underrepresented in comedy, and those that have been successful as female comediennes usually did not fit emphasized femininity (Connell); these women were funny because they were not conventionally feminine. However, we have begun to see more conventionally feminine successful female comediennes. Does this indicate a re-gendering of comedy? Using focus groups, I screened *Bridesmaids* for several groups of students at Inland University (a Catholic liberal arts university in the Pacific Northwest). I followed the screening with a discussion with the groups and additionally, analyzed their reactions throughout the movie. I examined the differences and similarities between men and women in terms of how they interpret comedy, with special attention to their reaction to contemporary female comedy and if there might be a new level of acceptability (socially) of female comediennes today.

Faculty Sponsor: Vikas Gumbhir, Gonzaga University

12C You'll Be the Prince and I'll Be the Princess: Gender, Relationship Expectations, and Popular Music

Megan Wertman

Popular culture in America is used by many people as an outlet for self-expression and provides scripts that consciously or subconsciously play a part in how we act out social roles. Previous psychological research has determined that music is used as a tool for self-identification, and a portion of popular music targets three main themes: sex, romance, and intimacy (Agbo-Quaye and Robertson). College-aged males and females at a private, liberal arts university met in focus groups of eight to ten people with a discussion to follow. Participants evaluated four to six music videos that contain a variety of messages related to sex, romance, and intimacy. Through discussion, the groups explored a relationship between popular music scripts and expectations in romantic relationships. This study will combine previously studies about music consumption, self-identification, and views of relationships and it seeks to develop an understanding between pop culture and relationship expectations.

Faculty Sponsor: Vikas Gumbhir, Gonzaga University

12D Role Models?

Ashley Meagan Allen

This paper examines the influence of the music industry on popular culture. The music industry is a male dominated profession that keeps female artists trapped in their gender sphere. Female artists participate in the sexism practices of the media to stay afloat in the business. Sociological theorists provide commentary to the structure set in place by the industry: Marx points out the inherently exploitative nature of capitalism while Weber comments on the bureaucracy of the business with white males having power at the top, dictating policy. Previous studies have focused on inequalities of the business but not the messages the artists present to their audiences. Through content analysis of music videos, lyrics and media images this study documents that female artists are encouraged to reinforce their own "inferior" position in society through their music by contributing to sexism practices. Solutions to this social issue are explored.

Faculty Sponsor: Marguerite Marin, Gonzaga University

Session 13: EMPIRICAL APPROACHES TO HUMAN BEHAVIOR I

Faculty Moderator: Gary Thorne, Gonzaga University

13A Letter Identification Inside and Outside Convex Forms

Andrew Maldonado, Gracie Tobar, and Lindsay Durkin

Convex forms, forms that bulge outward, are perceived as objects against a background more readily that concave forms, forms that sag inward. Since there is evidence that two features on a single object are identified more accurately than two features on different objects, we hypothesized that two letters within a convex form would be identified more accurately than two letters outside a convex form. In this experiment participants saw a series of curved vertical lines each with either two letters inside the curve, two letters outside the curve, or one letter inside and one letter outside the curve. The task was to identify the letters as quickly as possible. Results did not support the hypothesis. Identification was less accurate for letters inside the curve.

Faculty Sponsor: Gary L. Thorne, Gonzaga University

13B Linearization and Working Memory

Stevie Hamilton and Denis Ohlstrom

This research investigated the effect of linear and branched arrangements on working memory for visual patterns and word lists. Participants did two tasks. In the visual task they saw a series of connected circle patterns and were asked to duplicate each pattern from memory. In half of the patterns the circles followed a linear arrangement and in half of the patterns they followed a branching arrangement. In the word task participants saw a set of words and were asked to recall as many words as possible from memory. Half of the participants saw the words in a linear arrangement and half saw the words in a branching arrangement. After each task participants described their strategy and rated their level of tension while doing the task. Linear arrangements were recalled more readily than branched arrangements in the pattern task, but not the word task.

Faculty Sponsor: Gary L. Thorne, Gonzaga University

13C The Effect of Point-Shaped Stimuli on Reaction Time in Visual Search

Aaron Gillman and Morgan Robbins

This experiment tested the hypothesis that pointed shapes attract attention more readily than curved shapes. On each trial participants saw a vertical line with multiple points or a vertical line with multiple curves. For each line there was a target letter next to one of the points or one of the curves. The task was to identify the target letter as quickly as possible. We hypothesized that letters next to points would attract attention and be identified more quickly than letters next to curves.

Faculty Sponsor: Gary L. Thorne, Gonzaga University

13D Protectors or Promoters: Social Influences on Voluntary Sexual Initiation

Logan Steele

There are myriad risks when sexual intercourse is initiated before the age of 16. The current study sought to examine the predictive social influences of early, voluntary sexual initiation by surveying participants about their parents' attitude about sex and their perceptions of the sexual behavior of their siblings and peers. The sample was drawn from a liberal arts university in the Pacific Northwest, consisting of 623 participants. Over a third of the sample (37.7%) reported having had voluntary sexual intercourse, the age of debut ranging from 13-22 years (M = 17.4). The results indicated a statistically significant relationship between the age at which sex is initiated and a perception of permissive parental values. Also showing significance was a positive correlation between the age at older siblings' sexual debut and one's own. Finally, the perceptions of peer sexual activity differed significantly depending on the age at sexual initiation.

Faculty Sponsor: Adrian Teo, Whitworth University

13E Are Individuals More Positively Biased Toward Themselves or Their Relationship Partners?

Shannon Shiells & Nicole Sestrap

Previous research illustrates individuals' motivations towards self-enhancement and relationship partner-enhancement, but has not compared the relative strength of those motivations. Our research sought to examine which motivation is stronger by seeing whether people view themselves or their relationship partner more favorably when pressed to compare. Participants were 62 Eastern Washington University students currently in a relationship. Participants completed anonymous questionnaires that contained a list of 120 positive and negative personality traits. They rated the traits on a scale from 1 (My partner possesses this trait more than I do) to 7 (I possess this trait much more than my partner does), with 4 referring to equal trait possession. Results indicated a tendency to view oneself in a more positive light than one's own partner with regard to positive, but not negative, personality traits. A higher positive self-bias could negatively impact one's partner's self-perception and self-esteem, thus affecting the relationship satisfaction.

Faculty Sponsor: Amani El-Alayli, Eastern Washington University

Session 14: GENERAL BIOLOGY II

Faculty Moderator: Brook Swanson, Gonzaga University

14A The Evolutionary Effects of Environmental Light and Conspicuousness of the Male Fiddler Crab

Kathleen Cloughesy

The effect of light environment on animal visual signals contributes significantly to sexual selection and trait evolution. Due to light interaction with visual signals, differently colored individuals can appear more or less conspicuous than others and will be more likely to be chosen as mates. Fiddler crabs (genus Uca) provide an excellent model of study for this phenomenon due to large amounts of color variation between species on the male major cheliped. Many different species of fiddler crabs live in unique light environments and subsequently vary in color of the male large claw which is directly used in mate signaling. In fact, certain colors of crabs are more commonly found in different light environments on account of appearing more conspicuous. By comparing environmental dominant wavelength with male cheliped hue, this differentiation of conspicuousness of different colored species in different habitats may determine evolutionary patterns of the fiddler crab.

Faculty Sponsor: Brook Swanson, Gonzaga University

14B Global Amphibian Decline Due to the Chytrid fungus Bd

Will Glenny

Within the past few decades, amphibian species have declined throughout the world. Two conflicting hypotheses propose that the major driving forces of this mass extinction are either global warming or epidemic outbreaks of the chytrid fungus Batrachochytrium dendrobatidis (Bd). This study aims to correlate dates of amphibian declines with the epidemic spread of Bd in the Andes. Using skin swabbing and DNA extraction techniques, preserved frogs from 1947-2011 were checked for the presence of Bd. We predict that the spread of Bd will correlate with the observed pattern of amphibian declines throughout the Andes, supporting the hypothesis that Bd is the main cause of declines. With this information in mind, new approaches towards amphibian conservation can be explored and developed.

Faculty Sponsor: Alessandro Catenazzi, Gonzaga University

14C Annotation and Predicted Gene Function in a Novel Mycobacteriophage

Marshall Davis

Mycobacteriophages, viruses that infect bacteria, are among the most diverse and abundant life-forms in our biosphere. Despite the abundance and genetic diversity of phage, little is known about these life-forms. By isolating and sequencing phage genomes, a significant amount of new information can be obtained regarding the diversity and evolution of bacteriophage genomes. This study focused on the genetic annotation of a novel bacteriophage, SiSi. Its DNA sequence was analyzed using various programs including DNA Master, Phamerator, BLAST, and HHPred. The genome was fully annotated and approximately one-hundred genes identified, with putative gene functions predicted. During the process interesting genetic phenomena were discovered and will be discussed.

Faculty Sponsors: Marianne Poxleitner and Kirk Anders, Gonzaga University

14D Unique Genes in the Bacteriophage SiSi Genome

Patrick Hashiguchi

Mycobacteriophage viruses infect bacteria. They are the planet's greatest source of genetic diversity. The purpose of our study was to analyze the genome of SiSi, a phage isolated in our lab in 2011. Our research group investigated whether or not SiSi has unique genes. We used bioinformatic techniques including BLAST, Genemark, and Phamerator to find genes in the SiSi genome and compare them to genes found in other phage. These techniques allow us to compare the sequence of SiSi to known genomes, predict the coding potential of the genome, and predict the function of the genes. The genome contains some genes that are highly conserved and whose functions are well known. Many other genes are similar to genes found in related phage whose functions are unknown. We have also found possible instances of mutations unique to SiSi. In this presentation, examples of our results will be presented.

Faculty Sponsors: Marianne Poxleitner and Kirk Anders, Gonzaga University

Session 15: DATA FLOW MANAGEMENT

Faculty Moderator: Shawn Bowers, Gonzaga University

15A Dynamic Load Balancing of Scientific Workflows for Distributed Systems

Michael Agun

This research explores how to efficiently process streaming data using scientific workflows and distributed computing resources. In particular, while there are approaches for parallelizing workflows to run on distributed systems, they largely ignore streaming, requiring large amounts of intermediate storage and limiting possible concurrency. By extending these approaches to better support streaming data, my goal is to increase the amount of concurrency possible while making data-intensive workflows practical to efficiently execute in distributed computing environments. Specifically, I consider a general dataflow model of computation and approaches of dynamically parallelizing dataflow steps based on amount of data and processing used as the workflow executes. The aim of this approach is to balance the load on the computing resources at run-time, without requiring prior knowledge of the data and processing resources required by individual steps. In this talk, I also present my initial experimental results for current implementation.

Faculty Sponsor: Shawn Bowers, Gonzaga University

15B A System for Visualizing Large Scientific Workflow Provenance Graphs

Douglas Coulson

Scientific workflow systems allow scientists to represent and execute complex analyses that often involve multiple steps (e.g., for retrieving and transforming data, running external applications, and displaying results). As a workflow is executed, workflow systems record provenance information that includes the input data used, the steps that were executed, and the intermediate and final data products generated. Provenance information is typically represented as a graph of nodes representing data and analysis steps and edges denoting dependencies. These graphs are useful for verifying workflow results and determining data quality. However, most real-world workflows involve large amounts of data and computational steps, resulting in provenance graphs that are difficult to display to users in meaningful ways. In this talk, I describe an implementation of a visualization model to help address this problem by allowing users to define, view, and navigate between relevant portions of large provenance graphs.

Faculty Sponsor: Shawn Bowers, Gonzaga University

15C Security Concerns for Smartphone Ad-hoc Networks

Joel Doehle

Mobile phones have become ubiquitous in our society today and smartphones in particular have gained widespread popularity in recent years. Furthermore, smartphones have increased their computing and storage capacity to such a degree that they have become powerful computers themselves. Given this, I wish to investigate how new and novel data-sharing applications can be enabled for future smartphones. Specifically, I investigate the security issues of creating ad-hoc networks between unrelated smartphones. For example, how do two or more users with different smartphones on separate carrier networks establish a secure ad-hoc network in order to share data? I examine the state of current research in the areas of mobile ad-hoc network (MANET) security, and identify outstanding issues that still need to be solved.

Faculty Sponsor: Edward Walker, Whitworth University

Session 16: DIGITAL PIRACY

Faculty Moderator: Sean Swan, Gonzaga University

16A SOPA: An Objective Point of View

Evan Bull

An objective look into the SOPA (Stop Online Piracy Act) bill introduced by Republican Lamar Smith: the bill includes the request of court orders to bar advertising networks and payment facilities from conducting business with infringing websites, search engines from linking to these sites, as well as court orders requiring Internet providers to block access to the sites. The law expands existing criminal laws to include unauthorized streaming of copyright material, imposing a maximum penalty of five years in prison. My goal is to present arguments from noted sources on each side: in opposition of SOPA and in favor. The conclusion of my research paper will be to weigh the potential outcomes on copyright laws and piracy if SOPA were passed versus if the bill is shot down. It should be noted that SOPA has currently been tabled and will go under major revision before it is put up again.

Faculty Sponsor: Sean Swan, Gonzaga University

16B Piracy as a Political Ideology

Alexis DiSanza

From the humble beginnings of the Pirate Bay, a bit torrent website that allowed people to download information for free, the idea of piracy has transformed into a global political ideology. The establishment of the Pirate Party by Rick Falkvinge in Sweden can be compared to the rise of the Green Party in the 1970's as a grassroots movement. The party quickly gained popularity in Sweden and experienced relative electoral success running on a platform that supported reform of international copyright standards, the abolition of patent laws, and the strengthening of privacy laws for individuals. The Pirate Party has since gone international, with candidates running on piracy platforms all over the world. Piracy is no longer a fringe concern of hackers, but a growing international movement that continues to gain momentum.

Faculty Sponsor: Sean Swan, Gonzaga University

16C Cyber Warfare and Globalization

Christopher Friend

This research will discuss the changing nature of cyber warfare in relation to a dependence on technology in an era of globalization.

Faculty Sponsor: Sean Swan, Gonzaga University

16D Kopimism: A New Religion

Emma Wabunsee-Kelly

The Missionary Church Of Kopimism is a newly established religion based on the philosophical belief that all information should be free and accessible to all. Newly established groups, such as Pirate Bay, have paved the way for Kopimism to found an ideology that incorporates internet sharing principles into a moral system of belief, not solely a lifestyle choice. Kopimism establishes a set of basic practices and beliefs surrounding copyright and the individual right to information. Multiple social and legal ramifications surround the religion's participants. The Missionary Church of Kopimism is continuously scrutinized for violating the copyright laws of countries around the world, while also being criticized by Christianity for a disbelief in a finite God. Kopimism has the potential to change religious and ethical views around the world by influencing and encouraging the sharing of information among all people.

Faculty Sponsor: Sean Swan, Gonzaga University

Session 17: GENDER, REPRODUCTION AND INTIMATE RELATIONSHIPS

Faculty Moderator: Andrea Fallenstein, Gonzaga University

17A Ending Intimate Partner Violence

Alysha Chandra

Current criminal justice intimate partner violence (IPV) policies have been severely criticized as not being sufficient in putting an end to the abuse. This study looks at the different pieces of legislation and programs in place to aid victims of IPV. This study utilizes data from the 2000-2010 National Crime Victimization Survey along with other advocacy group data on domestic homicide. Based on these statistical reports, this paper reviews and critiques the policies in place for IPV. The data suggests that IPV is less likely to occur when: (1) healthy and respectful relationships are promoted; (2) attitudes do not condone violence; (3) when an appropriate and effective response to IPV case is taken; and (4) there are adequate opportunities and resources for both the abuser and abused victims. This study proposes that revisions be made in both the preventative and restorative aspects of IPV.

Faculty Sponsor: Marguerite Marin, Gonzaga University

17B Whose Pill Is It, Anyway? Examining the Factors that Affect a Woman's Contraceptive "Choice"

Skye Miner

With the advent of hormonal contraception, women's sexual liberation has been viewed as complete. Scholars have complicated this argument examining implications of giving pills to healthy women in order to regulate fertility, a process known as medicalization (Conrad 1992, Riessman 1983, Martin 1987, Zola 1983). One study performed by Sue Fisher and Alexander Todd (1986) observed the contraceptive encounter between women and their doctors and concluded that the use of hormonal contraception is not a “free-choice,” but is instead influenced by doctors. I hope to expand this study by conducting in-depth interviews with women found through volunteer sampling who have taken hormonal contraception for at least three months. I will analyze these conversations to determine how hormonal contraception has affected women’s daily lives. My preliminary results suggest the “choice” to take hormonal contraception is complicated by social forces which view her not as a subject but as a reproductive being.

Faculty Sponsor: Vikas Gumbhir, Gonzaga University

17C Motherhood Under Construction

Abbie Nordhagen

The stories of women in general, and mothers in particular, have been gravely under-represented in historical documents. Of the historical records kept of women and mothers, the majority were written by men. Never in history has a significantly large group of mothers had the knowledge and means to report the day-to-day events of life, until now. Motherhood is nothing new; blogging about it is. Since mothers have taken their daily life and published it on the internet, how have their own lives changed in response? I investigate mommy blogs to discover how blogging has altered the definition of motherhood in these women’s personal lives. How have traditional ideas of motherhood been challenged and altered since the advent of the computer? How has motherhood as a modern-day career been validated through the use of the internet?

Faculty Sponsor: Elizabeth Davis, Gonzaga University

17D The Pill: Striking a Balance between Technological Neutrality and Determinism

Ashley Ruderman

This paper considers oral contraceptives, specifically the Pill, as a neutral technological innovation turned deterministic over the span of fifty years. The Pill was an important factor in the Women's Liberation Movement. As the FDA approved the Pill in 1960, women were given the ability to effectively prevent pregnancy, further assigning women the kind of agency they needed to drive Second Wave Feminism. However, although the Pill was intended for use as a neutral technology, modern science has evolved the Pill into a drug now prescribed for a variety of reasons beyond the prevention of pregnancy. This paper will criticize the Pill as a deterministic technology, and will ultimately seek to moderate the regulation of women's bodies with sexual liberation.

Faculty Sponsor: Kirk Besmer, Gonzaga University

Session 18: ENVIRONMENTAL POLICY

Faculty Moderator: Michael Treleaven, Gonzaga University

18A Incentivizing Preservation: Human Determinism, Environmental Sustainability, and the Role of Additionality

Danielle Terry

In this paper, I explore the links between human determinism, applying market principles to policy, and additionality. Through human determinism, humans became capable of destroying Earth at an alarming rate. Market principles help combat this determinism while additionality brings in new ways to help the world become environmentally friendly.

Faculty Sponsor: Michael Treleaven, Gonzaga University

18B The Role of the Mission Beach Habitat Network Action Plan in Community Resilience Following Cyclones Larry and Yasi

Ryan Tuttle

Study of communities affected by disaster has led to various theories of community resilience. Norris et al. (2008) note the importance that social capital and community networking play in community resilience. These components have also been targeted as key components of community-based natural resource management (CBNRM). This study explores the role of the Mission Beach Habitat Network Action Plan (MBHNAP) (an example of CBNRM) in fostering trust and communication between stakeholders; it further analyzes what, if any, effects the plan had on community resilience in the wake of Cyclone Yasi. A review of recovery bulletins was performed and a series of interviews were conducted in the Mission Beach Area during the Cyclone Yasi recovery effort. The results and analysis of this research supports the conclusion that the development of the MBHNAP increased trust, communication, and coordination among disparate stakeholders in the Mission Beach community.

Faculty Sponsor: Jonathan Isacoff, Gonzaga University

18C Environmental Policy and Infrastructural Development in Evo's Bolivia

Chelsea Quilling

I am researching the progressive environmental policies of Evo Morales in Bolivia and how his environmental goals conflict with much needed infrastructural development projects. I will use the example of the TIPNIS march, a 300-mile-long indigenous march in protest of road construction through indigenous territory, to explain the paradoxical roles Morales must fill as an environmentalist as well as supporter of development.

Faculty Sponsor: Theodore Nitz, Gonzaga University

Session 19: CHARACTERIZATION OF BIOMOLECULES

Faculty Moderator: Jeff Watson, Gonzaga University

19A Kinetic Characterization of Class II HMG-CoA Reductase in Burkholderia Cenocepacia

Melissa Corson

3-hydroxy-3-methylglutaryl coenzyme A (HMG-CoA) reductase catalyzes the rate-limiting and first committed step in the mevalonate pathway for isoprenoid biosynthesis in eukaryotes and some bacteria and archaea. HMG-CoA reductase (HMGR) is a member of a small family of enzymes that catalyze two oxidative or reductive steps without the release of an intermediate. Previous cloning of the Class II HMG-CoA reductase found in Burkholderia cenocepacia now allows a thorough characterization of this enzyme not allowed before. We present here a kinetic and fluorescent characterization of Class II HMG-CoA reductase that will lead to a better understanding of the role and mechanism of this enzyme in Burkholderia cenocepacia.

Faculty Sponsor: Jeff Watson, Gonzaga University

19B Metallosubstitution of *b*-Carbonic Anhydrase

Shelby Cate

Previous research in the Cronk lab has revealed a noncatalytic bicarbonate binding site in proximity to the active site in *E. coli b*-carbonic anhydrase (ECCA). It has been hypothesized that there is an allosteric change associated with bicarbonate binding at this site that causes a decrease in enzymatic activity. The active site contains catalytically essential Zn^{2+}, which is coordinated CysHisMet(H_2O); when bound, water has a decreased pH allowing it to act as a proton donor to convert CO_2 to HCO_3^-. Upon binding of bicarbonate or another inhibitor at the noncatalytic site we propose the replacement of the H_2O ligand with an Asp residue located nearby. We intend to investigate and verify the nature of the allosteric change by replacing the spectroscopically uninteresting Zn^{2+} ion with optically active Cu^{2+} as an active site probe, opening the door to a variety of spectroscopic techniques unavailable in the native enzyme.

Faculty Sponsor: Jeff Watson, Gonzaga University

19C Characterization of the Antimicrobial Properties of Magainin-2 and Melittin

Ariam TecleMariam

Antimicrobial peptides function as the first line of defense in the host's innate immune response against infection, but the mechanisms by which they exert these properties is not well understood. While previous research using model systems propose that cationic antimicrobial peptides (magainin-2 and melittin) permeabilize membranes, interactions concerning bacterial cells have not been extensively investigated. In this study, peptide interactions with various *E. coli* and *B. subtilus* strains were evaluated to determine minimal inhibitory concentration (MIC) using broth-dilution method. Wells void of visual growth corresponding to MIC were inoculated onto agar plates to determine potential lethality characteristic of membrane permeabilization. In addition, fragments of each peptide were synthesized and tested to determine size influence on conserving antimicrobial nature. Results from this study will further explain the mechanisms being implored by these canonical peptides.

Faculty Sponsor: Matt Cremeens, Gonzaga University

19D Development of Membrane Mimetic Stationary Phases for Biomembrane Affinity Chromatography for Analysis of Natural and Synthetic Receptors.

Ian Joslin

Stationary phase materials designed to mimic fluid lipid bilayers are being developed and evaluated for the determination of solute binding to membrane-embedded receptors. The binding affinity of receptors to targets is highly dependent on local environment. For example, valinomycin strongly binds potassium ions in methanol, but affinity is reduced by 5 orders of magnitude when embedded in a lipid bilayer where it functions as an ion translocator. Measurement of binding affinity under these conditions is very challenging. This research describes the use of new chromatographic materials to study the binding of ions to membrane bound ionophores. Data from this system is compared to that reported using other methods. The advantages and limitations of the new approach and the progress on the utilization of the materials with synthetic small molecule receptors will also be presented.

Faculty Sponsor: Eric Ross, Gonzaga University

Session 20: SOCIAL PROBLEMS AND SOCIAL CHANGE

Faculty Moderator: Nicole Willms, Gonzaga University

20A Leading Leaders: Examining the Difference of Student Leaders Enrolled in a Comprehensive Leadership Program

Nolan J. Grady

The academic field of leadership has been one of the more rapidly growing fields of study in recent years (Wren, 1995). Increased interest in leadership as a field of study is well-documented; however, there is still controversy over which factors are most significant in developing leadership (Dugan & Komives, 2010). One factor studied has been leadership development programs (Zimmerman-Oster & Burkhardt, 1999; Cress et al, 2001). This research further explores the question of formal leadership education programs' contribution towards student leadership development contrasted with generalized educational programs, particularly at selective universities. Specifically, in this project, I compare CLP students with non-CLP students to better understand the role of formal leadership education in the development of future leaders.

Faculty Sponsor: Elizabeth Davis, Gonzaga University

20B Decentralization of the HIV/AIDS Response: Community Home-Based Care (CHBC) in the Struggle to Curb the Epidemic

Seth Morrison

Resource-limited settings in the developing world pose a challenging set of obstacles to healthcare. Community home-based care (CHBC) for the treatment of HIV/AIDS and other chronic debilitating diseases is well-suited to these settings and it has been receiving a great deal of attention in recent years from multilateral health organizations, governments, development banks, and health NGO's. I performed a systematic review of recent literature on CHBC in order to evaluate the progress that has now been made by the implementation of thousands of CHBC programs in the developing world and especially to assess its future potential for broadening access to HIV/AIDS treatment. "Decentralized" CHBC appears to produce treatment outcomes commensurate with institutionalized hospital care for HIV/AIDS patients and a variety of other diseases and conditions. Therefore, CHBC should continue to be promulgated as an integral short-term solution to the healthcare access problems associated with the HIV/AIDS epidemic.

Faculty Sponsor: Josh Armstrong, Gonzaga University

20C Foster Care: Procedure, Practice, and Policy

Rachel Wagner

To have the best chance to develop normally, children need to experience safety and security. Often, America's foster care system fails to provide children with positive environments in which they can learn, play, and grow. By looking at the rules and regulations guiding placements within the system, understanding the role of social workers and CPS in working with families and for children, and understanding the role of the legal system in determining foster care and adoption options, this research looks at the complex interplay of systems that contribute to children's negative experiences in foster care. By assessing the different forms of care available to children, understanding the regulations governing placements, and tracking the evolution of policies shaping the system over time, this study shows the need to increase social services for low-income families, contact between social workers and families, social support for struggling families, and federal funding for child-oriented programs.

Faculty Sponsor: Marguerite Marin, Gonzaga University

Session 21: HAPPINESS AND DEPRESSION

Faculty Moderator: David Houglum, Gonzaga University

21A The Ups and Downs of Depression

Nicole Barnhart

Recent research suggests that depressed persons may experience more variability in their daily mood than non-depressed persons. Using an online self-report measure, we collected data on participants' stress level, mood, and sleep for seven days. We found that as state depression symptoms increased among participants, so too did variability in stress, mood, and sleep.

Faculty Sponsor: Anna Marie Medina, Gonzaga University

21B A "Bad" Trait

Diana David and Brandon Barberio

This study examined whether trait-depression impacts performance on cognitive functioning tasks. Trait-depression was measured using the State Trait Personality Inventory before participants completed five tasks of cognitive function. Upon analysis, we found that participants high in trait-depression performed better on a scene recall memory task than participants low in trait-depression.
Faculty Sponsor: Anna Marie Medina, Gonzaga University

21C Are We Making Happiness Scarce?

Nicole Sanders & Andrew Newcombe

Does emphasizing the benefits of happiness lead to perceptions of happiness-scarcity? Do negative stressors increase valuing of happiness? We examined these questions in our research. Whereas a link was detected between negative stressors and the value of happiness, priming benefits of happiness did not lead to perceptions of happiness scarcity.
Faculty Sponsor: Anna Marie Medina, Gonzaga University

Session 22: SOCIOLOGY AND THE INTERNET

Faculty Moderator: Chris LaSota, Gonzaga University

22A Intellectual Property and Internet Piracy

Kieran Craigie

With today's technology it is easy for someone to copy some else's work, whether it be their music, paper, or artwork, and pass it off as their own. Is it wrong to use part or parts of someone else's work to create a new work? My presentation will be on the people who sample others' work and incorporate it into whatever they are doing with or without the original creator's consent. Is it piracy of intellectual property by borrowing from others peoples work, or is it natural inspiration that influences others and should not be a crime? To do this I will examine United States Copyright laws along with history of sampling material from others to create new work.
Faculty Sponsor: Sean Swan, Gonzaga University

22B The Truths of a Politician

Kaitlyn Dowd and Amanda Schmitz

This study will be focusing on a few questions: How truthful are the claims politicians make? Does race, gender, age or political affiliation affect whether or not a politician is truthful? Does the office a politician holds affect how truthful they are in their statements? This study will include an analysis of statements made by politicians from all across the board: state, federal, and local. There will be an examination of how truthful each politician is while taking into account their age, race, gender, political affiliation, and affiliation with major corporations. Statistical tests will be run to determine which characteristics affect politician truthfulness.
Faculty Sponsor: Andrea Bertotti Metoyer, Gonzaga University

22C It's Facebook Official!: Avatars and Identity on Facebook

Andy Jursik

The popularity of Facebook has spread from college kids to their parents, from small businesses to major corporations, making it a world-wide phenomenon. This social network now has over 500 million active users. The existing body of literature that explores the internet and other new forms of computer-mediated communication (CMC) focus largely on cause and effect relationships between humans and technology. Studies on Facebook and other social networks are limited altogether. I will interview students from a private university in the Inland Northwest about Facebook. These students will take me on a "guided tour" of their Facebook pages. Throughout the "tour" I hope to find general trends in the way my subjects construct their Facebook pages. My study will create a solid foundation, a grounded theory of Facebook, so to speak, for other social scientists to further analyze Facebook and its effects on ourselves as well as our personal relationships.
Faculty Sponsor: Vikas Gumbhir, Gonzaga University

22D Forever Alone: An Experimental Examination of the Effect of Anonymity on Online Behavior

Daniel Ortega

As the internet and other forms of computer mediated communications (CMC) become increasingly used for social interactions, little research has been done exploring the impact that anonymity granted through such communication mediums has on human behavior. Suler (2004) proposed that the anonymity afforded to individuals online leads to what he called toxic disinhibition, the phenomena when individuals engage in deviant behavior and violate social norms online that they would normally not. This research is intended to empirically test Suler's theory and measure the impact that anonymity has on deviant behavior online. The experiment will measure if individuals are more likely to break social norms when anonymous online compared to when they can be easily identified in a group setting. Participants will be observed playing a violent video game under two conditions. In each condition, the amount of expletives, racial slurs, and other offensive language used will be recorded.
Faculty Sponsor: Vikas Gumbhir, Gonzaga University

Session 23: WOMEN'S ROLES IN FICTION AND FAITH

Faculty Moderator: Karin Heller, Whitworth University

23A The Women of *A Prayer for Owen Meany*: Subtle Hints of Comedy and Faith

Karen Robison

This presentation examines the treatment of female characters in John Irving's novel*, A Prayer for Owen Meany*. As understood by this essay, women are identified as participating in one of two distinct roles throughout the novel. This presentation traces these roles while identifying how women are used to provide comedic elements in the story, demonstrate examples of faith, and enhance virtue and value of the male characters, proving that, though women are given a small part in this novel, it is pivotal role.

Faculty Sponsor: Laura Bloxham, Whitworth University

23B Are Women Human?

Catherine Cook

Dorothy Sayers asks the question, "Are Women Human?" According to her, what makes a human being is activity, not gender. A Christian anthropology based on this idea, with insight from other thinkers, could overcome the dichotomies between Complementarians and Egalitarians regarding both the role of women as humans and in leadership in ministry. As both affirm the importance of equal dignity of men and women, unity is desperately lacking regarding how humanity lives out the image of God. A delicate and crucial topic to consider, one ought to recognize human beings' actions and the actions of those around them as what makes them human and not their gender. A vital topic not only for individuals but for the Church as a whole, this presentation will explore Biblical manhood and womanhood, ultimately seeking to promote the universal human freedom to live out the will of God in one's life.

Faculty Sponsor: Karin Heller, Whitworth University

23C Mary in the Plan of God and the Communion of the Saints (An Ecumenical Discussion)

Kayla Sisk

The Christian church has been tragically divided for centuries. It is this great division between Protestants and Roman Catholics that continually tears apart Christian unity. Both Catholics and Protestants alike long for unity; that much is clear. However, there exist three substantial and primary obstacles that appear to obstruct the pathway towards unity between these Christian brethren: The Eucharist, The Pope, and Mary. Of these three obstacles Mary's role in the Christian faith, her role in God's Salvation plan, and her participation in the Communion of the Saints (and what that means) is perhaps the most misunderstood aspect of Christian doctrine for both sides of the debate. She is also one of the most divisive, but she need not be. This research attempts to address the misconceptions on both sides of this conversation, and attempts to show how much middle ground there actually is.

Faculty Sponsor: Karin Heller, Whitworth University

Session 24: MORNING POSTER SESSION

Faculty Moderator: Christy Watson, Gonzaga University

24A Diarchy or Monarchy? Identifying the Potentate of the Kingdom of God

Anthony Austin-Walker

The concept of the kingdom of God with Yahweh as the Monarch of such a kingdom is a provoking topic of both the Old Testament (OT) and New Testament (NT). From Davidic praises to God as king to the Danielic and Isaiaic renderings of God establishing and having an everlasting kingdom, the idea of this time of dominion eventually weaved its way into the NT. Echoes of the OT are seen in the scriptures of the NT where an interlacing occurs between the kingdom of God and the kingdom of Christ. The goal of this research is to discuss the idea of the kingdom of God in both the OT and NT and to establish evidence which reveals the identity of the king. The argument assumes that the kingdom of God and Christ are the selfsame and that the king serves as a single monarch.

Faculty Sponsor: Garrett Kenney, Eastern Washington University

24B SNP Analysis of Cytochrome b for the Analysis of Genetic Diversity within *Odocoileus hemionus* Herds within Washington State

Chelsea Bennett, Kyle Thomas and Kienen Loe

This paper reports studies on inter and intra herd genetic diversity among two populations of mule deer (*Odocoileus hemionus*) located in diverse parts of Washington State. The first population, Vulcan, appears in the northern part of the state and the second, Revere, in the southern regions. Blood samples from the deer are taken directly into PCR using Hemo Klen Taq Polymerase without the need for direct DNA extraction. PCR products are then sequenced and analyzed. The resulting sequence was analyzed for single nucleotide polymorphisms within the cytochrome b gene. Our research found an adaptive SNP that leads to an amino acid change within cytochrome b of one of the populations.

Faculty Sponsor: Steve Fisk, North Central High School IST

24C Development of Fluorometric Assays for the Neonatal Diagnosis of MPS IVa and MPS VI

Nichole Boyd, Zhiwei Shi and Ryan Keefe

Lysosomal storage diseases, including the mucopolysaccharidoses (MPS), are a set of rare genetic disorders resulting from a deficiency of enzymes involved in cell waste storage. Development of fluorometric assays for the neonatal diagnosis of MPS IVa and MPS VI will be presented. These assays use dried blood spots incubated with synthetic substrates. Enzymatic activity was measured by fluorimetry and reaction conditions were varied to optimize the differentiation between newborns with no enzyme activity and those with sufficient levels of enzyme activity.

Faculty Sponsor: Trisha Duffey, Whitworth University

24D The Effects of Reading Mastery with Flashcard Practice on the Development of Word Recognition with a Middle School Student

Melaina Cole and Wendy Wingeard

This case study was conducted to increase word recognition of the participant "Peter", an adolescent with mental retardation using a model-spell-test procedure along with Reading Mastery curriculum and flashcard practice. Throughout the study the researchers utilized the data to make decisions regarding treatment strategies as seen by the temporary return to baseline in Set 1 after the completion of the Reading Mastery lessons. After an increasing and/or stable trend was established, intervention began on the next set of words. The results showed the implementation of Reading Mastery to be effective at increasing word identification. Once lessons were complete a flashcard practice procedure was used to assist with maintenance of word recognition. The success of the study was demonstrated through Peter's posttest scores, increasing from an average of seven words correct out of 40 on the pretest to an average of 39 out of 40 words correct on the posttest.

Faculty Sponsor: Kimberly Weber, Gonzaga University

24E The Effect of Hippotherapy on Voluntary Muscle Contraction

Kayla Conover, Chloe Cook and Marlowe Peter

Cerebral palsy is a condition where there are lesions on the brain that can negatively affect physical and neurological development. Humans affected by cerebral palsy often have difficulty contracting their muscles as efficiently as non-affected people. This results in uncoordinated motor neuron function that can be seen and analyzed using an EMG. We used EMG testing because it has been shown to objectively gather data. Hippotherapy (horse therapy) is known to improve the muscle tone, gait and primary mover contractions. A primary mover is the muscle that does the most work in a group of muscles involved in a specific movement. We examined the results of hippotherapy on a nine-year-old boy using EMG measurements of both the vastus medialis and vastus lateralis before and after therapy sessions in order to determine if the therapy aided in his muscle coordination and contraction.

Faculty Sponsor: Mike Sardinia, Whitworth University

24F Variation in Fiddler Crab Claw Strength

Gina M. Contolini

The intertidal-dwelling fiddler crab (genus Uca) has two notable characteristics: the asymmetry of the male cheliped and the exceptional force it can deliver. This large cheliped has two main functions: to be a semaphore to attract females and a weapon to combat other males. We are interested in the tradeoff involved in growing an appendage meant for these two purposes. We calculate maximum force based on claw morphology and compare these calculations to actual force values (from field data) to examine how closely related force is to morphology. Finally, we compare these data among several species to examine the morphological and mechanical evolution of the cheliped. We expect to find trends between force and claw morphology and that variation will be more limited within a clade.

Faculty Sponsor: Brook Swanson, Gonzaga University

24G The Role of Perceptual Load in Visual Selective Attention and the Fate of Irrelevant Information: Part 1

Marisa Crisostomo

The main functions of selective attention are to separate relevant from irrelevant information and to allow relevant information access to conscious awareness. Before 1995, two major theoretical positions regarding the location of this attentional "filter" were proposed. The "early" selection model stated that irrelevant information was discarded prior to semantic analysis, while the "late" selection model stated that all information received such processing. However, Lavie (1995) found that task difficulty, or "perceptual load" plays a major role in the selection process. "Hard" tasks show evidence of early selection, while "easy" tasks show evidence of late selection. However, Lavie's original results are difficult to replicate. In this study, perceptual load in a letter discrimination task (X vs. Z) was manipulated by changing set size (1 vs. 6). Targets were presented with compatible, neutral, or incompatible distractors. We hypothesize that distractor interference will occur only in the easy condition.

Faculty Sponsor: Mike Nelson, Gonzaga University

24H Establishing a Technique for Data Mining, Analysis, and Pattern Discovery of Autism Patient Data

Kristin Beltz

Autism is an increasingly prevalent disease which impacts the quality of social interaction and communication of individuals. In spite of the growth of diagnoses, there is little known about the factors that lead to an autistic child. The goal of this research is to analyze patterns and discover statistics within autism patient data that may assist researchers in obtaining a better grasp of the causes of the disease. Due to the wide variety of data types that are available, discovering a consistent data set to analyze is challenging and restricts the conclusions that can be made through data mining algorithms and this research. The objective of this project was to develop processes for analyzing data and draw basic conclusions from the data analyzed. However, due to challenges within the data sets, very little patterns or conclusive evidence was discovered in the study.

Faculty Sponsor: Susan Mabry, Whitworth University

24I SNP Analysis of Intra-Herd and Inter-Herd Genetic Diversity of Ancient *Bison bison*

Marina Defrates, Nicole Hamlin, KellyAnn Cameron and Austen Frostad

Bison populations have expanded from a near extinction at the end of the 19th century due to over exploitation and habitat loss. They now number in the hundreds of thousands but their genetic purity and diversity is in question. The genetic effects of this severe bottleneck are compounded by cattle gene introgression due to intentional and non-intentional interbreeding with cattle from the late 16th century forward. Our analysis, using ancient bone samples, of Bison prior to the introduction of cattle and the bottleneck, reveals both intra- and inter-herd diversity and baseline allele frequencies of specific mitochondrial alleles.

Faculty Sponsor: Steve Fisk, North Central High School IST

24J An Analysis of Human Alu Insertion Frequencies using Alu Specific PCR and Hardy-Weinberg Analysis

Tyler Dennis, Nicole Hamlin and Corey Horn

The objective of this research was to assess genetic diversity using Alu insertion frequencies to further our understanding of human population genetics. Comprising twelve percent of the human genome, Alus cause shifts in a genome in many ways including changing the regulation of genes and shifts in recombination during meiosis. Cheek cells provided the genomic DNA that was analyzed using PCR and Alu specific primers. Resulting insertion frequencies were further analyzed to identify if specific Alu loci are in Hardy-Weinberg equilibrium.

Faculty Sponsor: Steve Fisk, North Central High School IST

24K Effects of Moderate Exercise on Cognitive Processing and Reaction Time

Alyson Donahoo

Recent studies have shown that there is a direct correlation between exercise and cognitive processing as well as reaction times, although questions remain surrounding the nature of the effect. In this study, we aimed to find out what type of effect moderate exercise has on cognitive processing and reaction times. For this we conducted trials with different participants and tested their visual, auditory, and cognitive reaction times at selected time intervals during a moderate work out. A high degree of individual variation was observed, but some conclusions were made from averaging the trials. From this combined data, we can see that moderate exercise has a positive effect on cognitive processing and auditory reaction times, whereas, there is a negative effect on visual reaction times. These findings could benefit students and their academic performance.

Faculty Sponsor: Michael Sardinia, Whitworth University

24L An Analysis of Adaptive SNP Frequency within ATP 6 within Mule Deer Populations in Washington State

Taylor Duncan

Large mammal populations across North America underwent dramatic population losses due to over harvest and habitat destruction and change during the 19th and early 20th century. These same populations have emerged from this dramatic bottleneck and are for the most part at sustainable populations. Mule deer (*Odocoileus hemionus*) are one of those populations that are now at sustainable numbers but are at risk due to continued habitat loss and loss of genetic diversity and gene flow. Populations that emerge from bottlenecks can experience significant genetic drift due to the presence of rare mutations in the founding populations. The mitochondrial gene, ATP 6, has been found to have significantly high mutation frequencies within other ungulate populations that have undergone bottlenecks. We used ATP 6 specific PCR and DNA sequencing to analyze Washington State Mule Deer populations for baseline mutation frequencies as a measure of gene flow and population hardiness.

Faculty Sponsor: Steve Fisk, North Central High School IST

24M Freedom of Speech: Internet Cases Impeding Citizen Rights

Hannah Hawkins

The presentation will cover cases that involve citizens' rights of free speech that have been compromised through the removal of content on internet sites, due to reasons of indecency; patrolling of internet sites with intent to remove content, due to the intent to protect children; by blocking content on publicly used computers, such as those in libraries. Though intentions are right, they are restricting on civil liberties of American citizens. The presentation will explore cases violating the right to free speech, specifically cases dealing with the Internet, and the outcomes to each case.

Faculty Sponsor: Sean Swan, Gonzaga University

24O Using the Minnesota Nicotine Withdrawal Scale- Revised (MNWS-R) to Assess Withdrawal Symptoms in Recreational Hookah Users

Carolyn Herrity

The prevalence of recreational waterpipe use has grown, particularly in young adults. Little is known about whether or not this population experiences withdrawal symptomology, an important indicator of nicotine dependence. The aim of the present study is to investigate whether intermittent hookah smokers experience withdrawal symptoms in the 48 hours after smoking. Twenty intermittent hookah smokers participated in four smoking sessions and two post-smoking assessments across 4 weeks. The MNWS-R was used to assess the DSM-IV symptoms of withdrawal. Preliminary results indicated 24 hours post-smoking, 77% of individuals reported no withdrawal symptoms and at 48 hours, 82% did not report withdrawal symptoms. These findings were surprising in that we were expecting to see withdrawal symptoms similar to those of binge drinking due to the large amount of tobacco smoked in a 45 minute session. Further research is needed to understand the risks of hookah smoking.

Faculty Sponsor: Donelle Howell, Washington State University

24P Development of Non-Invasive Protein Probes to Measure Ca++ in the Chloroplast Stroma and Thylakoid Lumen

MacGregor Hodgson

Evidence suggests that calcium could play a role in regulating photosynthesis. In lighted conditions, two compartments in the chloroplast - the thylakoid and chloroplast stroma - have opposing needs for calcium. When the lights go out, a large spike in calcium concentration has been detected in the chloroplast stroma. Our lab hypothesizes that this peak is inversely mirrored in the thylakoid lumen. To measure calcium concentrations in these regions in vivo, vectors containing the gene of calcium-sensitive protein probe, YC3.60, and the transit peptide targeting the thylakoid lumen, OE17, or targeting the chloroplast stroma, RBCS, were designed. Additionally, the protein probe YC3.60 was isolated for characterization and future alterations to YC3.60 that will allow for improvement of the protein's stability inside thylakoid lumen. The detailed calcium measurements will give insight into the processes underlying calcium transport in chloroplasts and the role of calcium in the regulation of photosynthesis.

Faculty Sponsor: William Ettinger, Gonzaga University

24Q Carbon Monoxide Effects Associated with Hookah Smoking

Laura Hoeg

Common myths regarding hookah smoking include 1) hookah is safer than cigarette smoking because the water filters out the harmful "toxins" and 2) herbal shisha is safer than nicotine containing shisha. The purpose of this study was to investigate levels of CO in intermittent hookah smokers across various smoking conditions and tobacco types. This is a 2x2 within subject design consisting of 1) volume condition (High or Low) and 2) tobacco condition (Herbal or Nicotine). CO samples were collected from 20 participants prior to and after 4 smoking sessions. Preliminary results indicated the same level of CO ($t=0.918$; $p<0.40$) regardless of nicotine or herbal type in high condition. The CO levels for high volume conditions were roughly equivalent to smoking a pack of cigarettes. This contraindicates that hookah smoking is safe. Some of the health effects of CO are nausea, dizziness, vomiting, and at toxic levels, death.

Faculty Sponsor: Donelle Howell, Washington State University

24R SNP Analysis of Baseline Allele Frequency of Cytochrome b and ATP 6 within Ancient *Bison bison*

Candace Ireland, Nicole Ecklund and Joey Bell

Between the nineteenth and twentieth centuries, the *Bison bison* population experienced an extreme bottleneck, which resulted in a near-extinction because of factors including over hunting. Through government support and private conservation efforts including intentional interbreeding with cattle, the bison population was returned to sustainable numbers. The severe bottleneck and introgression with cattle brings Bison genetic diversity and purity into question. The expected genetic impacts of a population expanding out from a severe bottleneck include high frequencies of maladaptive alleles that were originally rare in the founding populations. We are looking at baseline allele frequencies using DNA sequencing of two mitochondrial genes, cytochrome b and ATP 6, within ancient Bison populations that precede the introduction of cattle to North America and the 19th century bottleneck of *Bison bison*.

Faculty Sponsor: Steve Fisk, North Central High School IST

24S Optimizing Electrodes for use in Biosensors through Deposition of Prussian Blue and Nickel Hexaferrocyanide in Various Layers

Amber Johnson

Prussian blue is an effective hydrogen peroxide transducer advantageous for use in various biosensors. The benefits of Prussian blue with regard to its activity with and selectivity for hydrogen peroxide are however, overshadowed by its instability. This research aimed to increase the stability of Prussian blue for use in biosensors by depositing optimal number of layers of Prussian blue and nickel hexaferrocyanide, taking into consideration length of time electrodes lasted as well as time required to layer electrodes. By testing with Controlled Potentiometric Electrolysis (CPE) in 10^{-4} M H_2O_2, electrodes with Prussian blue as the outermost layer were found to last between 1 and 1½ hours whereas electrodes with nickel hexaferrocyanide as the outermost layer lasted over three hours, regardless of total number of layers deposited. The number of trial runs performed was limited however, and future work testing electrodes with various numbers of deposited layers remains to be done.

Faculty Sponsor: Drew Budner, Whitworth University

24T The Intersection of Psychological and Spiritual in Mental Illness

Bethany Johnson

Previous research has highlighted the intersection of psychology and religion but fails to adequately describe the psychological and spiritual in relation to mental illness. The study sought to explore the intersection of the psychological and spiritual in relation to mental illness. The participant of the single case study related the intersection of the psychological and spiritual of mental illness to a person's psychological and spiritual beliefs as the key to mental and emotional wellbeing. The data was analyzed using Consensual Qualitative Research (CQR; Hill, et. al, 2012). The four main themes that emerged were: intersection of the psychological and spiritual, distinction of the spiritual, belief systems, and treatment. Ideally, this research will help create a healthy dialogue among leaders in the Christian church and in the field of psychology and will formulate a greater understanding among the various individuals who work with the mentally ill.

Faculty Sponsor: Noel Wescombe, Whitworth University

24U Andean Frog Calling Activity in Response to Temperature

Kevin Johnston

Climate change is impacting biotas all over the world. High elevation areas, such as the Andes, are being affected more drastically than lower elevations. Mountaintop species are particularly susceptible to warming temperatures because these species cannot migrate to higher elevations to escape the changing environment. If these species' activity rates are affected by temperature, climate change could reduce their reproduction or survival. In order to assess this, we examined calling activity of three mountaintop frogs at various temperatures. Using auditory analysis programs, we found that individual responses to temperature were reflected in group calling behavior. Species differed in the shape of this response, from having no temperature dependency to showing a thermal optimum. We conclude that the impact of climate warming on reproduction will vary among Andean mountaintop frogs.

Faculty Sponsor: Alessandro Catenazzi, Gonzaga University

24V The Role of Perceptual Load in Visual Selective Attention and the Fate of Irrelevant Information: Part 2

Alifiya Khericha

"Perceptual load," or task difficulty, appears to modulate the level at which relevant and irrelevant information are separated from each other (Lavie, 1995). In "hard" tasks, irrelevant information does not gain access to processing resources, while in "easy" tasks, it does. Here we manipulate task difficulty in a go/no-go letter discrimination task (H vs. U) through the use of a simple cue conjunction (go signal = blue circle or blue square) and a complex cue conjunction (go signal = blue square or red circle). This allows for the manipulation of load independent of stimulus set. Targets were shown with compatible, neutral, and incompatible distractors. We hypothesize that incompatible distractors will increase reaction times only in the simple conjunction condition. However, this effect may not be present in mean reaction times. Instead, it may be observed in other variables, such as error rate and distribution-level analyses of reaction time.

Faculty Sponsor: Mike Nelson, Gonzaga University

24W The Effects of Cover, Copy, and Compare with Free Time in Math for Elementary Students with Severe Behavior Disorders

Brittany Poff:

This study evaluated the effectiveness of cover, copy, compare (CCC) for math with three students with severe behavior disorders. The participants were a 12-year-old and two 10-year-old boys. Participant 1 did not have a specific diagnosis; but all previous assessments indicated he had learning disabilities in the areas of reading and mathematics with a behavioral component. Participants 2 and 3 were both diagnosed with severe behavior disorders not otherwise specified. A multiple baseline design across participants was implemented to evaluate the effectiveness of CCC. Corrects and errors were recorded for three mathematical concepts that included writing the fraction of a shaded area, as well as adding and subtracting fractions with the same denominator. Each participant increased correct responses and decreases in errors during CCC. The intervention was practical and easy to implement in a self-contained special education classroom setting.

Faculty Sponsor: T. F. McLaughlin, Gonzaga University

24X The Effects of Copy-Cover-Compare on Spelling Accuracy of a 5th-Grade Student Diagnosed with Attention Deficit Hyperactivity Disorder and on a 6th-Grade Student Diagnosed with Learning Disabilities

Whitney Larimer, Rebecca Nelson and Ashley Danforth

The purpose of this study was to determine if a 5th-grade student with attention deficit hyperactivity disorder and a 6th-grade student with learning disabilities could increase their spelling accuracy using a copy-cover-compare intervention. The resource room teacher identified 22 core words for focus. Each week, the students worked on 5-7 words, then took a spelling test on all 22 core words at the end of the week. Student A's spelling accuracy improved from an average of 3 words during baseline to an average of 6.86 words correct during intervention, and Student B improved from an average of 4.4 words correct during baseline to an average of 13.2 words correct during intervention. The procedure was cost effective and required little training to implement. The teacher intended to continue the intervention, and the students indicated they enjoyed the intervention.

Faculty Sponsor: Betty Fry Williams, Whitworth University

24Y Molecular Cloning and Characterization of a Prolyl Dipeptidyl Aminopeptidase from *Lactobacillus helveticus*

Tae-Hun Lee, Kristin Wucherer, Christopher Frick and Helya Peyman

Lactobacillus helveticus is a bacterium present in some prominent foods (e.g. Swiss cheese). Recent research has shown that an enzyme called a prolyl dipeptidyl aminopeptidase (PEPX) is produced by these bacteria. Prolyl peptidases have been suggested to be a potential detoxifying agent of gluten peptides by breaking down the proline peptide bonds that are otherwise difficult to digest. This leads to great interest in the activity of PEPX due to the fact that gluten related dietary diseases have become more prominent in recent years. In this study, the PEPX gene from a commercial *L. helveticus* culture was amplified via PCR and cloned into a pET expression vector. The recombinant gene contains an N-terminal histidine tag for affinity purification and is under an IPTG inducible promoter. Induction of PEPX protein expression in an *E. coli* bacterial host and purification of the protein produced allows for kinetic characterization of the purified enzyme.

Faculty Sponsor: Deanna Dahlke Ojennus, Whitworth University

24Z Quantification and Analysis of *Apis mellifera* Mid-gut Bacterial DNA and the Effects of Agricultural Practices on the Population Density

Hailey Markham-Patti and Keara Rypien

Quantification of *Apis mellifera* mid-gut bacterial consortia populations can be utilized to analyze the effects of environmental perturbations such as agricultural chemicals and lend insight into the health of Honey bee hives. Changes in gut flora can be attributed to changes in bees' diet and the chemicals that are applied to the base material that is being foraged. Total DNA extraction and quantification including 16S PCR quantification was used to analyze the effects of various crop agricultural applications on mid-gut bacterial consortia quantities.

Faculty Sponsor: Steve Fisk, North Central High School IST

24AA Developing and Testing Fluorescence-Based Assays for Neonatal Diagnosis of Lysosomal Storage Diseases

Katie McClanahan and Hannah Neill

Lysosomal storage diseases, including the mucopolysaccharidoses (MPS), are a set of rare genetic disorders involving a deficiency of enzymes used in cell waste storage. We present the initial development of an assay using N-acetyl-beta-D-glucosaminidase and dried blood spots (DBS) for the neonatal diagnosis of MPS VI. Assay used synthetic substrate, and contained lead (II) chloride and bovine serum albumin, additives necessary to optimize enzyme activity, which aided in detection via fluorimetry. Assay was oriented to fit the schedule of a newborn screening lab. Assay was tested with Quality Control (QC) DBS from the Center for Disease Control. The assay developed was found to distinguish between QC DBS with high, medium and low levels of enzyme activity. Assay was unable to distinguish between QC DBS with low and base levels of enzyme activity.

Faculty Sponsor: Trisha Duffey, Whitworth University

24BB SEM Investigation of the Fatigue Failure Effects of Hydrogen Embrittlement

Adam Nekimken

Increased interest in the use of hydrogen as an environmentally friendly fuel has created a need for data that is useful in the design of hydrogen storage systems. Hydrogen tanks must be designed to withstand exposure to high pressure hydrogen as well successive load and unload cycles as the tank is used and refilled. It is thus desirable to understand the effects of hydrogen exposure on fatigue behavior in the materials used to build tanks. Samples of 304 stainless steel were heated to 300˚C in an environment with high pressure hydrogen (~20,000 psi) at Sandia National Laboratory. These samples, along with samples that received no hydrogen treatment, are then fatigued to failure. The failure surface is examined using scanning electron microscopy (SEM) to study the characteristics of the failure, especially its brittle or ductile nature.

Faculty Sponsor: Patrick Ferro, Gonzaga University

24DD An HPLC Analysis of Coffee

Russell Quamme

This experiment analyzed coffee by means of High-Performance Liquid chromatography (HPLC). The goal was to determine whether or not the differences in particular blends of coffee could be ascertained from the differences observed on chromatograms of each respective type of coffee. Four different samples of coffee were analyzed after optimizing the coffee chromatogram. The most effective column used for separation was the 25 cm C18 column, which resulted in the best separation. There were some observable differences in the chromatograms between coffees, as well as identifiable consistencies, and continuing research will involve identifying what many of the differentiating peaks are by compound, as well as separating out coffee with HPLC not just through blends but different ways of roasting as well.

Faculty Sponsor: Drew Budner, Whitworth University

24EE Discriminated Rebel? The Effects of Discrimination on Reactance

Tyson L. Rice, Katie Higgins and Nate Wareham

Psychological reactance is a phenomenon wherein a person experiences a negative emotional reaction to outside pressures to conform. We predicted that being discriminated against may cause a psychological reactance response. College student participants were asked to recall an experience where they were personally discriminated against, an experience of witnessing a member of a different group be discriminated against, or an experience where they were personally treated in a way which was displeasing to them (the control condition.) It was hypothesized that the participants would experience the most state reactance in the condition in which they were personally discriminated against. Data has already been gathered from 100 participants and the results will be completed before the presentation date.

Faculty Sponsor: Amani El-Alayli, Eastern Washington University

24FF College Stress: Are We Doing Enough?

Kayla Rothenbueler

While stress is commonly assumed and measured among college students, effective programs for reducing stress are not as prominent in the literature. Many institutions seek better information regarding addressing student stress successfully. The pressures to succeed and achieve are higher than ever with the current struggling economy, tuition increases, extended time to complete degrees (especially in STEM areas), job scarcity, and a consistently higher set of expectations. Students are constantly reminded of having to “up their game” in order to be a superstar in a world full of already driven people. Between the balancing of social life, grades, family, relationships and the ideal of physical appearance, emotional health is at risk for college students. Successful programs and services for assisting students with stress are not often presented or disseminated. Evidence and outcomes of successful stress reduction programs on college campuses will be presented.

Faculty Sponsor: Boyd Foster, Gonzaga University

24GG The Role of Perceptual Load in Visual Selective Attention and the Fate of Irrelevant Information: Part 3.

Frankie Russo

Lavie (1995) found that the disparity between "early" vs. "late" selection models of attention is largely influenced by perceptual load (task difficulty). Early selection is seen in difficult tasks, while late selection is seen with easy tasks. However, this effect (at level of mean RT) is difficult to replicate. Moreover, mean RT does not effectively measure attentional capacity, while distributional analyses can. In this experiment, participants performed a go/no-go letter discrimination task (N vs. X) under both easy and difficult perceptual conditions with compatible, neutral, and incompatible distractors (irrelevant stimuli). If Lavie's hypothesis is correct, results should indicate that the irrelevant distractor was processed (as shown by increased RT) only in the easy task. We predict that this effect will not be manifest in mean RT, but rather in other measures of performance, such as error rate and distributional measures of capacity.

Faculty Sponsor: Mike Nelson, Gonzaga University

24HH Analysis of Genetic Diversity and Gene Flow within *Richardsonious balteatus* (Redside Shiner) within the Latah Creek Watershed

Alicia St. Amont and Paige Henning

After the Missoula Floods and prior to human interference, the Spokane River Watershed was home to diverse fish populations. Unfortunately human interaction including damming of the river, irrigation, and agriculture, pollution and overfishing led to the destruction of most of the native fish populations including the extinction of all of the anadromous salmonids. Minnows are the leftovers of this ancient ecosystem and excellent subjects to explore genetic diversity and gene flow within the system. Our research was limited to an analysis of *Richardsonious balteatus* (Redside Shiner) from the Latah Creek watershed, a sub-watershed of the Spokane River. Restriction Fragment Length Polymorphism analysis of a region of cytochrome b was used to quantify diversity and explore gene flow between different areas of the watershed.

Faculty Sponsor: Steve Fisk, North Central High School IST

24II Extraction Efficiency Analysis of a Common DNA Extraction Protocol when Applied to *Apis mellifera* Mid-gut Tissue and Bacterial Consortia

Amanda Stewart

The quantification of bacterial consortia from a variety of materials including soils and digestive material is challenging due to many bacteria refusing to be cultured outside of their consortia communities. A novel approach to quantifying soil and gut bacteria is the total DNA extraction and quantification from sample materials. Knowledge of the extraction efficiency of the chosen extraction protocol is critical in the quantification of bacterial DNA. This research reports on the extraction efficiency of Qiagen DNeasy Tissue protocols on mid-gut Honey bee bacterial consortia.

Faculty Sponsor: Steve Fisk, North Central High School IST

24JJ The Effects of Using Augmentative and Alternative Communication to Teach a Preschool Student with Developmental Delays to Request Assistance and Attention

Nicole Talkington

The purpose of this study was to evaluate the effectiveness of augmentative communication (ACC), specifically a Flip 'n Talk, with a preschool student with developmental delays who was thought to be on the Autism Spectrum. The ability to functionally request assistance within a daily routine and functionally request the attention of individuals, specifically teachers, aides and eventually peers was the focus of this study. A multiple baseline design was employed to evaluate the intervention. The results of this study suggested that ACC is an effective way to teach functional communication.

Faculty Sponsor: T. F. McLaughlin, Gonzaga University

24KK The Use of Online Typing Programs In Combination with Public Posting with and without Consequences to Increase the Typing Fluency and Accuracy Skills of Seven High School Students with Severe Behavior Disorders

Dani Troup

The purpose of the present investigation was to examine the effects of public posting with and without consequences on keyboarding. This was evaluated in an ABCAD single case design. The final consequence (music) was chosen by the participants. The participants were seven high school students with severe behavior disorders. The behavior measured the number of correct and error characters typed. These data were taken in a self-contained classroom using the computers already present in the classroom. Increases in student performance were found when public posting was employed. Larger increases were found when consequences were added as an additional incentive. When the class was allowed to choose their consequence, additional improvement in keyboarding was found. Three of the participants did not decrease their performance when a return to baseline was employed. The benefits of increasing keyboarding were noted. The procedures were easy to implement and evaluate in the classroom.

Faculty Sponsor: T. F. McLaughlin, Gonzaga University

24LL The Effects of Direct Instruction Flashcards and Reading Racetracks on Sight Word Accuracy of Three Elementary Students with Learning Disabilities

Anne Marie Ulring

The purpose of this study was to determine the effectiveness of Direct Instruction Flashcards and Reading Racetrack procedures on the correct vocalization of 1st grade sight words. The participants were three elementary students in a special education resource room. A multiple baseline design across participants and sets of sight words used to test the efficiency of DI flashcards and reading racetracks was employed. The success of the procedures led to the continuation of the intervention. The participants enjoyed the procedures and each improved their academic skills over their baseline and intervention performances.

Faculty Sponsor: T. F. McLaughlin, Gonzaga University

24MM An Econometric Inquiry into the Preference for Males in Relation to the Declining Sex Ratio in India

Benita Bina Walker

This research focuses on the economic costs of the sex selection bias in favor of males in India and the identification of major factors that influence the current declining sex ratio. Some of these factors include female labor force participation, contraceptive use, literacy and abortion rates. This research shows specific population trends and how, although there has been a steady increase for the overall public, there has been a decline in the population of young females. The 2011 Census taken by the Indian Government suggests that the sex ratios of children are increasing in favor of males. It also shows income levels and other factors that are influencing the population. This study investigates the cultural preference for males and its impact on society and female selective abortions. By using data from the census taken, this research compares different states to identify key variables that relate to the declining sex ratio.

Faculty Sponsor: Kelley Cullen, Eastern Washington University

24NN Effect of American Ginseng on Postprandial Blood Sugar Levels in Healthy Subjects

Shaina Whittlesey

The purpose of this single-blind study was to examine the effects of American ginseng, a hypothesized hypoglycemic agent, upon postprandial blood glucose level in healthy subjects. The study was effectuated by taking a total of seven blood sugar levels from each subject over the span of 105 minutes on two occasions, once with placebo and once with American ginseng. Upon each participant's arrival, a fasting blood sugar was taken and they were administered 6 capsules containing 3g of either placebo or American ginseng. At forty minutes, blood sugar was taken again and a 25g oral glucose drink was ingested. Blood sugar was taken at 15-minute intervals for the following 90 minutes. It was found that the area under the curve from time 40 minutes to time 105 minutes was less for American ginseng than for placebo. Due to the small sample size, these results were not statistically significant.

Faculty Sponsor: Michael Sardinia, Whitworth University

24OO The Effects of Adenomatous Polyposis Coli Mutations on Cell Adhesion: A Window into Colorectal Cancer Development

Jennifer Wilson and Nicholas Gamboa

Adenomatous polyposis coli (APC) is a tumor suppressor protein that is part of a signaling pathway involving beta-catenin, a cell adhesion molecule that also regulates nuclear gene expression. APC therefore influences the adhesion between cells via adherens junctions. Mutated APC genes produce truncated forms of the protein and are responsible for a large percentage of colorectal tumors. We have shown that cultured cells expressing mutated APC exhibit slow migration rates and appear to adhere less tightly to their neighbors. Using a cell dissociation assay, we will compare wild type cells to cells expressing truncated APC to determine if there are in fact differences in their ability to adhere to other cells. By understanding the behavior of cells with mutated APC, therapies can be developed to prevent these cells from becoming cancerous.

Faculty Sponsor: Mia Bertagnolli, Gonzaga University

24PP The Effects of a Model Lead Test Format to Teach a 13-year-old Boy with Moderate Disabilities Sounds and Words

Lauren Worcester

This study was designed to evaluate the model lead test procedure for effectiveness in teaching sounds and words to a 13-year-old boy with moderate disabilities. In the model lead test procedure, the researcher modeled, prompted the participant to say sounds and words in unison, and then asked the participant to say it independently. A repeated sound out procedure was also used, in which the participant was asked to sound out words multiple times with increased speed. The results showed an immediate increase in the number of correct sounds in set one and a gradual increase in set two sounds, along with a progressive increase of correct words in set one words and rapid increase in set two words. Overall, the study showed that for individuals with little or no reading skills, the model lead test procedure in addition to a repeated sound out procedure was an effective method.

Faculty Sponsor: Kimberly Weber, Gonzaga University

Session 25: CULTURAL MEANINGS

Faculty Moderator: Corliss Slack, Whitworth University

25A Seattle Architecture: Promotion of the City through the Use of Landscape

Chloe Dye

After a fire in 1889 that destroyed the commercial center, businessmen in Seattle such as Henry Yesler and Thomas Burke worked together to create visual similarity between Seattle and large Eastern and Midwest cities by employing prominent architects. Architectural historians acknowledge that new styles such as Chicago and Romanesque Revival were used in Seattle from the 1890s to the 1910s, but largely ignore the role business leaders played in turning Seattle into a visual argument for its similarity to great urban centers like Chicago and New York. The architectural styles demonstrated the values of balance and order, and displayed wealth and technology. In a race to attract new investment and support for industries such as logging, fishing, and port facilities for which there was competition, Seattle businessmen used the city itself and its landscape as an advertisement for their competence. This paper uses Seattle history, architectural history, and visual analysis.

Faculty Sponsor: Corliss Slack , Whitworth University

25B The German Christian Church, 1932-1945

Jennay Smith

The German Christian movement, a faction of the Protestant church during 1932-1945, created a version of Christian theology which absorbed German nationalism and anti-Semitism. Alterations surfaced in liturgy, doctrine, and revisions of the Bible. The 600,000 participants in this movement adopted these beliefs in the aftermath of WWI as a result of a strong desire to preserve German unity and restore the German Volk. WWI left Germany with numerous problems, and Germans felt they were being punished by God for abandoning the Volk, the essence of the German people. Hitler's government, not the Weimar Republic (1919-1933), brought hopes of reclaiming this Volk. German Christians also emerged from this mindset. This history of the German Christian church raises some key historical questions. The creation and perpetuation of this radical group can nevertheless be attributed to a popular response to Hitler, and the hopes involved in the new government he was creating.

Faculty Sponsor: Corliss Slack, Whitworth University

25C Mixed Messages: A Visual Analysis of Tibetan Cultural Representation in Beijing, China

Matthew McCourt

The Chinese government officially classifies fifty-six ethnic groups within China. One is the Han majority; the other fifty-five reside on the outskirts of mainstream society and culture. Included within these fifty five minorities is the Tibetan ethnic group, predominantly situated in the Tibet Autonomous Region, Sichuan, Qinghai, Gansu and Yunnan. During a ten-day study through the Northwestern region of Qinghai I observed Tibetan religion, culture, and language. Returning to Beijing, it was clear that the reality of Tibetan life is looked past in place of a commercialized stereotype, endorsed by the government. My presentation serves as a side-by-side visual criticism of the misconceptions on minority, Tibetan culture that the government provides. I then briefly analyze current issues that face the Tibetan people and means by which these are downplayed through stereotype and "universalization" of Chinese society.

Faculty Sponsor: Jennifer Holsinger, Whitworth University

Session 26: ONLINE MARKETING TOOLS

Faculty Moderator: Kevin Henrickson, Gonzaga University

26A The Effects of the Google Brand and Anonymous Online User Reviews on the Consumer Evaluation and Decision Process for Choosing a Restaurant While Using Google Maps

John Baxley

Though Google Maps began as an address locator, today it acts as a new consumer resource, providing user-generated reviews. Restaurant choice emerges as an area affected by this, evidenced by 70% of adults reporting they use the Internet when restaurant searching and 25% reporting they use a consumer review site as a primary search tool. This research seeks to examine how the addition of the Google brand and anonymous word of mouth reviews to Google Maps shifts the way consumers perceive a restaurant. The study was conducted using handouts containing identical review sets, given to four groups of similar age and gender distribution. For two groups, half of the handouts were devoid of the Google brand. For the others, half of the handouts retained original usernames, the other half replacing usernames with traditional names. Participants rated their opinion of restaurant aspects and level of trust placed on the reviews.

Faculty Sponsor: Brad Sago, Whitworth University

26B Best Mobile Marketing Tools to Achieve Marketing Objectives among Traditional College-Age Students

Cuong Le

Mobile phones have become an essential communication channel used daily by billions around the world and have opened a plethora of marketing opportunities. According to CTIA (2011), the number of wireless connections in the United States exceeds the population with 324.3 million connections. With the rapid growth of smartphones and tablet computers, IDC predicted the number of mobile app downloads will grow from 10.9 billion in 2010 to 76.9 billion in 2014. Does this mean businesses need to invest in some sort of mobile app? Traditional college-age students, 18-24, were surveyed to analyze how mobile devices (with emphasis on mobile phones) are used and the apps' effectiveness to achieve marketing objectives (increase traffic, revenue, leads, awareness, etc.). This research evaluated the effectiveness of mobile marketing tools as the Millennial Generation begins to acquire greater purchasing power.

Faculty Sponsor: Brad Sago, Whitworth University

26C The Influence of Online Shopping and its Effects on Consumers

Dustin Payne

This research analyzed the effects of online shopping on in-store purchases. Consumers today can purchase virtually any product online. This online movement has led some brick and mortar retail stores to struggle to bring in purchases. The boundaries separating online and in-store shopping are vastly dissolving. Consumers are increasingly doing online research before they make a purchase. When they get to stores, they are pulling out smartphones and tablets to compare prices and read reviews. Are consumers more influenced by online information rather than in-store trial? To measure the change in shopping habits I analyzed buyers' (ages 18-65) shopping preferences from online to in-store purchases. Understanding the channels and preferences these tech-using shoppers want will help retailers to more fully integrate the buying experience.

Faculty Sponsor: Brad Sago, Whitworth University

26D How the Use of Color in Online Advertisements Affects Awareness, Retention, and Attitude in College-Age Students

Kelli Raines

On a daily basis people are observing and being influenced by their environment. In this environment a person will be introduced to much promotional material. What advertisements are remembered? The goal of this study was to gather information about how colors in online advertisements affect viewer awareness, retention, and attitude toward products and services. Do different colors have various effects on viewers? Colors are culturally meaningful and meaning can change over time - historically, certain colors may have attracted more attention than they do now. Businesses can use this information to create suitable and memorable promotions for their customers. The research was done by providing college-age students, ages 17 to 23, with online advertisements created with different colors, but were otherwise identical. Participants were tested on information from the advertisement and their attitude toward the product or service advertised.

Faculty Sponsor: Brad Sago, Whitworth University

Session 27: POWER, RESISTANCE, AND RITUALS

Faculty Moderator: William Hayes, Gonzaga University

27A Inked: An Ethnographic Study of the Tattoo Community

McCage Griffiths

This presentation will center on my ethnographic research study of the tattoo community, with a particular focus on several areas. Primary among these foci will be the differences between those individuals who are more heavily tattooed, and those who simply have tattoos. However, an additional focus will be placed on the connection between tattoos and additional group memberships, and how this affects artists and parlors as a whole.

Faculty Sponsor: Vikas Gumbhir, Gonzaga University

27B When Church and College Clash: Religion and the Hook-up Culture at a Private University

Victoria Ledesma

Recent research indicates that a new dating behavior has been emerging on college campuses. The phenomenon, labeled the “hook-up culture”, is essentially defined as physical intimacy outside of the context of a publicly acknowledged and exclusive relationship. In the past, studies have yielded inconsistent results in their attempts to assess the influence of religion on general sexual attitudes and practices. My study explores specifically the impact of college students’ depth of commitment to their preferred religion on their participation in and perceptions of the hook-up culture. Using a self-administered questionnaire at a private, liberal arts university, I measure key dimensions of religiosity, especially behavior and identification, and analyze the link between these measures and the sexual attitudes and practices surrounding the hook-up culture.

Faculty Sponsor: Vikas Gumbhir, Gonzaga University

27C More Than Moans: "The Vagina Monologues” and Storytelling in Resistance

Diana Mallon

"The Vagina Monologues” has a profound effect on those who participate in its production. Performing the stories of others allows performers to begin to speak about their own stories, especially surrounding issues of gender, sexuality, and violence. This paper explores how the production, banning, and eventual performance of an activist play, "The Vagina Monologues", in a community that resists such narratives had an impact on the women involved in the production. This subject was explored through analyzing reflections written by participants and community members, participant observation, and in-depth interviews with actresses and their partners. The experiences of those involved in the performance confirm the empowering nature of activist theater, and also the particular importance of storytelling about sexual violence in contexts where discussions of sexuality and violence are discouraged or prohibited.

Faculty Sponsor: Vikas Gumbhir, Gonzaga University

27D Fashion and Society

Priscilla Mullins

What to wear? It’s a question that plagues us every day. We think of ourselves as an individualistic society, but is that really true? Throughout history there have been laws placed upon people dictating what people can and cannot wear. These sumptuary laws defined what people were allowed to consume based on what the rulers deemed appropriate. These were placed in order to keep people from trying to dress like a social class they didn’t belong to or even to prevent all people from wearing something that only the monarch wanted to wear. Today we may not have as clear laws as back then but we still have “rules” of how to dress. Advertising and society tend to dictate what is deemed acceptable to wear. People tend to judge other people on what they wear and place them in a certain social class based on the initial assumption.

Faculty Sponsor: Marguerite Marin, Gonzaga University

Session 28: IMAGINING IRELAND: JOYCE, YEATS AND THE LITERARY REVIVAL

Faculty Moderator: Charles Andrews, Whitworth University

28A The Closet as a Cage: Homosociality in James Joyce's Portrait of the Artist as a Young Man

Shannon Kelly

Much of the research circulating about James Joyce's *A Portrait of the Artist as a Young Man* focuses on the novel as a coming of age story, but does not delve into the evolution of Stephen Dedalus' sexuality. The male interactions conducted within the homogenous institutions, such as the church and male boarding schools in the novel, are best defined by a sense of homosociality: a connection of two individuals which balances the steep precipice between a love of comrades and the homoerotic. This paper widens the scope beyond the heteronarrative to explore the fluidity of sexuality in differing aspects of a young artist's life, and how the ambiguous nature of sexuality defines the portrait of who Stephen Dedalus becomes.

Faculty Sponsor: Charles Andrews, Whitworth University

28B The Significant, Repeated Images of Hands in James Joyce's *A Portrait of the Artist as a Young Man*

Karen Robison

This essay examines the significance of the image of hands repeated throughout James Joyce's *A Portrait of the Artist as a Young Man*. Throughout the novel, the image of mostly other characters' hands represent many things to the main character Stephen Dedalus. The significance of the image to Stephen includes how hands illustrate experience, sexual lust, and, most importantly, the ability to create art. The attention and descriptions given to this image illustrates Stephen's draw towards hands and measures his development as he grows from child into adult and begins to create art of his own.

Faculty Sponsor: Charles Andrews, Whitworth University

28C The Myths of Ireland's Future

Sarah Pollock

Mythic elements are a defining feature of the Irish Literary Revival. While William Butler Yeats is the author most often recognized for his use of Irish mythology, John Millington Synge and Lady Augusta Gregory were equally invested in incorporating mythology into their plays. This paper explores how Lady Gregory, although typically overshadowed by the men of the Irish Literary Revival, actually played a role critical to Yeats, Synge, and ultimately, the revival's success.

Faculty Sponsor: Charles Andrews, Whitworth University

Session 29: CRIMINAL JUSTICE IN AMERICA

Faculty Moderator: Al Miranne, Gonzaga University

29A Examining the Implications of Police Movie Trailers

Sean Sargent and Andrew Cataldo

This presentation will focus on the themes present in trailers for police films from 1991 to 2011. The police are one of the most important institutions in American society, and public perception of police agencies can have important implications for their effectiveness. Policing films are a major source of media that can influence this perception. Trailers for these films are commonly aired and show the aspects of the film that producers see as attractive. A content analysis of these trailers delineates the characteristics of policing that are most likely to draw audiences. Policing is shown to involve violence, danger, and masculinity, which increases the sensationalism of the trailers and theoretically increases the interest of the audience. The level of violence in the trailers will also be traced from the 1991 to 2011 to measure any increases or decreases throughout recent history.

Faculty Sponsor: Georgie Ann Weatherby, Gonzaga University

29B No Room for Estrogen

Francisco Villa

This research addresses female police officers' work styles. Are female police officers more effective in their work place if they do not participate in the practice of aggressive and hyper masculinity policing? Research has shown that police culture supports and embraces the practice of machismo and aggressive policing. In addition, other studies document that female officers face difficulties because male officers believe in the "social construction" of females as not strong or tough enough for the job of policing. However, a few studies have found that female officers can have an advantage by using their "feminine attributes". This study is based on data that comes from previous published data. This study documents that female officers tend to have a more "peaceful" approach to solving situations, and disputes.

Faculty Sponsor: Marguerite Marin, Gonzaga University

29C White Collar Crime: How the Media Influences Sentencing

Madeline O'Neil and Miguel Preciado

Media influences Americans lives in many aspects of their day to day life; little do Americans realize how the media influences what we consider to be normal. This paper will unravel how media influences us, thus how the criminal justice system punishes deviants for crimes based on multiple variables such as gender and race. This concept sprung the idea to research the differences in white collar criminal sentencing based off of how much media attention is given between races and gender. Specifically, we examined five of the top ten News Media in the country for white collar deviants. We compared the crime committed and sentence given across different races and genders. We used statistics to analyze our collected data to determine the correlations between our variables and the sentence.

Faculty Sponsor: Andrea Bertotti-Metoyer, Gonzaga University

29D Justice for All? College Students Perceptions of the American Criminal Justice System

Adriana Mendez

Beliefs about the criminal justice system in the U.S. are varied from positive to critical depending on the section of the system that is examined. Researchers have neglected to thoroughly examine the role that legal socialization plays in people's beliefs of the legal system. My research will explore how two aspects of legal socialization, "Friends/Family working in the legal/ criminal justice system" and "personal involvement in the system as an object of it" influence beliefs. To measure people's feelings about the system, I will use a modified version of Hulin and Maher's (1950) Attitudes Towards the Criminal Legal System Scale. I will gather my data via a self-administered survey of a representative sample of students at a private, Catholic university. This university is particularly interesting because its curriculum emphasizes social justice and possible implications of this study may lead towards benefits of emphasizing social justice issues in higher education.

Faculty Sponsor: Vikas Gumbhir, Gonzaga University

Session 30: THE INTERNET AND FREEDOM OF INFORMATION

Faculty Moderator: Sean Swan, Gonzaga University

30A Pirates of the Political Realm: The Age of Free Information

Daniel Bossier

In this presentation I will be providing an objective examination of the Pirate Party that was first founded in Sweden in 2006 and the parties that have since been founded across the globe. This examination will look at the platform of this international political movement and its call for the elimination or reduction of copyright laws. Additionally I will explore whether or not this is truly a newfound political ideal or simply a libertarian model that has focused its attention on a specific issue. The technological expansion that has occurred over the last twenty years has necessitated adjustments and adaptations to many facets of global society. The Pirate Party perhaps embraces these technological changes more than any other and is harnessing this fervor in order to create profound infrastructural changes with sweeping implications.

Faculty Sponsor: Sean Swan, Gonzaga University

30B Wikileaks and Freedom of Information

Ian Larsen

Media organizations have always had the most inviolable protection, First Amendment protection of freedom of the press. In investigative journalism, government leaks of classified information are essential. Wikileaks was supposed to be a legal media entity to overcome government secrecy, embodying the belief that no person or body responsible for governing citizens should have anything to hide. Amid increasing calls for government transparency in America, prosecutors want to silence Wikileaks and similar sites. Their motives are not entirely sinister, though. Lives could be put at risk by a hacker in the DoD servers. In the coming years after the Assange trial, we will probably see an overhaul in internet privacy policy in the United States. Debate goes on about what kind of information should be protected as news, the definition of a news outlet, and the future of Internet privacy.

Faculty Sponsor: Sean Swan, Gonzaga University

30C The Ethics of Copyright in the Digital Age

Cory Stumpf

An in-depth exploration of the concept of copyright, examined through the lens of different philosophers, such as John Locke, Karl Marx, John Stuart Mill, and Immanuel Kant, among others. This is an attempt to determine whether or not there is an ethical basis for the ownership of intellectual property, and also whether or not the "theft" of abstract intellectual property such as digital media is immoral. The main focus will be establishing the abstract idea of "intellectual property", and to determine how it has changed the ethical concept of stealing in the digital age, in which information can be copied infinitely. This will be done by synthesizing various works by different political and ethical philosophers in order to find a solution to this contemporary ethical problem.

Faculty Sponsor: Sean Swan, Gonzaga University

30D Digitalization and the Limits of Copyright Law

Koby Warren

Traditionally, copyright laws have been rooted in physical property. However, with the digitalization of ideas, copyright law now stands at an impasse where former concepts of property law are no longer completely applicable in a digital age. This presentation seeks to examine the tension between current copyright laws and digital society's unwillingness to honor them. This source of media industry scandal and frustration will be approached with an analysis of the history of copyright law and recent Supreme Court decisions. This analysis will illuminate the extent to which the law should provide protection, particularly in the context of media distribution technologies such as BitTorrent.

Faculty Sponsor: Sean Swan, Gonzaga University

Session 31: "YEAH, I KNOW THE TYPE": LESSONS IN PERCEPTUAL ACUITY

Faculty Moderator: Tony Osborne, Gonzaga University

31A The Illusionist

Corey Protzman

This presentation profiles a typology that is common to modern society. This typology has been labeled "The Illusionist" because of the multiple facets this person utilizes. The illusionist will employ a variety of roles such as the confidant, the snitch, the guise, or the life of the party to get what they want. All these roles form a larger purpose of seeking out information from others without having to self-disclose any personal information themselves. Self-disclosure is what makes one person vulnerable to another; however, the illusionist fears that the self-disclosure will leave him/her hurt or betrayed. The danger of the illusionist is their ability to portray images and manipulate feelings. The perception of the illusionist is rarely negative because they are so deceptive, but a closer look reveals a typology grounded in falsity.

Faculty Sponsor: Tony Osborne, Gonzaga University

31B "What's in a Name?" Different Coach, Different Game Plan

Abbie Nordhagen

People can be categorized into different fundamental types based on their behavior and motivation. The psychoanalyst Fritz Perls, for example, grouped all of humanity under two categories, toxic or nourishing. Coaches are no exception. People are motivated to teach for different reasons. Through observation, a coach's motivations can be deduced through his or her actions.

Faculty Sponsor: Tony Osborne, Gonzaga University

31C Different Types of Doctors

Regina White

I will present a few of the different types of doctors, broken down into the specialties of the doctors: doctors who practice general medicine, Pediatricians, Surgeons, and Labor and Delivery Doctors. First, there are the doctors of general medicine; these are the doctors that you generally go to consult about your physical. There are the Pediatricians who are the heroes of our children. Hand in hand with Pediatricians, there are the Labor and Delivery doctors who are there to help introduce new life into the world. Then there are, of course, the surgeons, who are like the gods of the medical field. They can do anything from removing your appendix, to giving you a new heart. Every doctor has a different approach and attitude in medicine that goes hand in hand with his or her specialty. But every one of them is a hero in their own way!

Faculty Sponsor: Tony Osborne, Gonzaga University

31D Tell Me Your Preferences, and I'll Tell You Who Your Friends Are

Christine Ngan

America loves labels. Kyle's a jock. Sarah's a science geek. Johnny is a pot head. The list goes on of these meaningless words that we stamp on each others' foreheads. The branded mark on your face tells me everything I will ever need to know about you, right? Wrong. Today, I am not going to talk your ear off about the immorality of labeling, but rather I am going to tell you about your strength of preferences. During the outbreak of World War II, a mother-daughter duo developed a type indicator test based on Carl Jung's studies of personality types. From there, we can analyze how our preferences show how we relate to the outside world and the people around us.

Faculty Sponsor: Tony Osborne, Gonzaga University

Session 32: STATIC VISION AND MOVING BOATS: PERSPECTIVES IN CREATIVE NONFICTION

Faculty Moderator: Nicole Sheets, Whitworth University

32A Dirty Words

Kristen Bierlink

In this essay, I explore the connections between dirty words and what it truly means to be "dirty". I weave my experiences of living on a farm in Washington with other moments like cursing, visiting a family member in jail, and finding acceptance in school, reflecting on the moments that taught me what certain words mean. Most importantly, I note the contrast between being covered in dirt and being dirty, both described by the same word but drastically different in meaning.

Faculty Sponsor: Nicole Sheets, Whitworth University

32B Focus

Danielle Douvikas

My two essays are about my experience with chronic pain through my thyroid condition and my rare neurological condition. Pain is the permanent disturbing and enlightening lens in which I see the world. Pain thwarts my focus of the world around me and makes me more observant of other pain around me. Through my observance of pain, I have learned that there is a good side to pain. My essays are about pain's magnificent and extraordinary side.

Faculty Sponsor: Nicole Sheets, Whitworth University

32C Idso

Andrea Idso

This piece is a potpourri of several related topics wrapped into a creative non-fiction piece. It is primarily on my connection - or lack thereof - to my grandfather, and how I'm getting to know him though documents left behind, but it also touches on my general family history, my connections to Norway, and how my family members today are affected by the loss of my grandfather when he was quite young.

Faculty Sponsor: Nicole Sheets, Whitworth University

32D Sequestered at Sea

Amy Thoburn

Sequestered at Sea details an experience aboard the MV Explorer, the main vessel of the Semester at Sea program. From social hierarchy among students to details about food and community philosophy, this story focuses on the dynamics of an on board microcosm. Archbishop Desmond Tutu makes an appearance alongside a tragic story that changed the environment of ship life. By excluding details about the ports and countries experienced, this story revolves around the way of life 600 college students experience through the eyes of an average pastor's daughter from an overly conventional Presbyterian university.

Faculty Sponsor: Nicole Sheets, Whitworth University

Session 33: MEETING TARGETED ORGANIZATIONAL AND CONSUMER NEEDS

Faculty Moderator: Rebecca Bull Schaefer, Gonzaga University

33A What College Students Look for in a Bank Account and the Factors that Play a Role in Choosing a Bank

Heather Bowman

This research examined what college students look for in a banking relationship, and the selection process for a bank. With banks being businesses seeking profit, research was needed to see what university students find important in their banking experience. Banks can use this information to build customer loyalty with this market segment while they are in college. Banks will be able to make money from this group as they age, get car and home loans, paychecks, and begin investing. This study was completed by surveying a group of traditional college students age 18-24.

Faculty Sponsor: Brad Sago, Whitworth University

33B An Examination of the Effectiveness of Communication Methods to Geographically Dispersed Members of an Organization

Katherine Eastham

This research explored the mediums of marketing that reach individuals who participate in Live Action Role Play (LARP). This research will give LARP organizations an opportunity to grow their numbers and become more effective and targeted when marketing to a geographically dispersed market. Most LARPs are one to two days long, occurring at different locations and depending on the LARP event in different time periods and realities. The event involves individual players creating characters and interacting with other players in character. The largest LARP organization has 30,000 official members and over 2.5 million participants worldwide. With 20 LARP organizations in the states of Washington and Oregon, there is a large market of individuals who have an interest in genre fiction and LARP activities. Conducted through an electronic survey distributed to individuals who LARP in Washington and Oregon, this research examined the methods and effectiveness of communication to LARP participants.

Faculty Sponsor: Brad Sago, Whitworth University

33C Support and Recognition at a Family-Owned Firm

Kat Storwick

A common concern for organizations is figuring out how best to recognize and motivate employees. In order for organizations to be successful they must make sure that their employees feel the company has fairly met their obligations to the employees. This research is based on the principal that recognition is important in the workplace, but possibly more important to those in family-owned firms.

Faculty Sponsor: Rebecca Bull Schaefer, Gonzaga University

33D An Exploration of Contributing Factors in Selecting a Retreat Venue amongst College-Aged Students

Samantha Trestik

With over 800 venues in Oregon and Washington, retreat centers must constantly keep a competitive edge in order to remain both viable and attractive to a wide-range of potential guests. This study determined what factors are rated highest among college-aged students as they choose which retreat venue to host their events. The research gave retreat centers insight to where they need improvement, as well as the areas where they are excelling in as they cater to the college-age demographic. Further, it underlined the importance of promotional materials and demonstrates which materials should be given emphasis. Participants were asked if they had ever attended a retreat center. Based upon their response, they were given a survey with questions directed towards personal experience or reasons how they choose retreat venues in order to determine preferences and which factors weighed more heavily when selecting a particular retreat venue.

Faculty Sponsor: Brad Sago, Whitworth University

Session 34: EMPIRICAL APPROACHES TO HUMAN BEHAVIOR II

Faculty Moderator: Gary Thorne, Gonzaga University

34A Stressing Out the Stressed Out

Marisa Crisostomo & David Sheppard

We examined how trait anxiety, under heightened state anxiety affects executive functioning. Participants completed the State-Trait Personality Inventory, and then completed tasks tapping executive functioning. We detected no correlation between trait anxiety and executive performance when coupled with a heightened level of state anxiety.

Faculty Sponsor: Anna Marie Medina, Gonzaga University

34B The Effects of Spacing Task Difficulty on Problem-Solving

Amanda Marie-Shyne Dawson

We compared the effects of low-arousal and high-arousal tasks on problem-solving under massed and spaced conditions. All participants first did an anagrams task in which they created words from the letters of a cue word. After a short break, all participants repeated the same task with the same cue word. There were three conditions during the break. In the massed condition the break was brief and there was no additional task to perform. In the spaced/low-arousal condition participants colored pictures from the Human Brain Coloring Book for 13 minutes. In the spaced/high-arousal condition participants solved difficult word association problems for 13 minutes. We hypothesized that participants would create more words the second time they performed the anagrams task. We also hypothesized that this improvement would be greater in the spaced/low-arousal than in the spaced/high-arousal and massed conditions.

Faculty Sponsor: Gary L. Thorne, Gonzaga University

34C Task-switching, Tension, and Creative Problem Solving

Haeley Meyer and Lauren Stemper

We investigated the effect of tension on spaced performance in creative problem solving. The participants performed a Remote Associates Test, a common measure of problem solving, twice with a puzzle task in between. Each time the participants did the Remote Associates Test they saw the same 20 sets of three related words, and were asked to think of a fourth word that was related to the other three. After the first Remote Associates Test the participants were given a puzzle game for 13 minutes, then they rated their level of tension on a five-point Likert scale before doing the Remote Associates test the second time. Participants who rated their tension low during the puzzle game improved more on the second Remote Associates test than participants who rated their tension high.

Faculty Sponsor: Gary L. Thorne, Gonzaga University

34D Who Will Help Me? The Effect of Gender on Helpfulness

Amelia Mills

This experiment investigated the effect of gender on helpfulness. We explored which gender is most likely to help and be helped. Our hypotheses were that a woman would be more likely to help someone who is in need of help and a woman would be more likely to be helped by both women and men. Fifty-four participants, students from Whitworth University, participated in the study. The gender role theory and the bystander effect influenced our experiment and the analysis of our results. Our results were not statistically significant, although they did show that males were quicker to help, and that females were more likely to be helped. Previous research established which gender was more helpful. Previous research with a motorist in distress did find that men helped faster, and that women were more likely to be helped. Our findings can be generalized to Whitworth University and similar universities.

Faculty Sponsor: Noel Wescombe, Whitworth University

34E Risky Business

Elisabeth Kornberg and Erin Underbrink

In this study, the researchers were searching for a link between experiential avoidance and risk taking behaviors. They predicted that the participants with high levels of experiential avoidance would take part in more risky behaviors such as drinking, stealing, or even riding roller coasters. We measured the level of experiential avoidance within our sample using the AAQ-II. The researchers also had each participant fill out the Risky Behavior Questionnaire that we designed for this study. In addition, they used a computer program that displayed ten distressing and sad images, as well as ten happy or neutral images. The researchers expected that the participants with high experiential avoidance would remove the negative images faster than those with lower levels of experiential avoidance. In the end, they found no statistical results most likely due to their small sample size and the impersonal photos used in the computer program.

Faculty Sponsor: Anna Marie Medina, Gonzaga University

Session 35: SOLVING PROBLEMS IN THE DEVELOPING WORLD

Faculty Moderator: Annie Voy, Gonzaga University

35A The Paradox of Haitian Poverty

John Emery

The paradox of Haitian poverty is that this small island nation has received more money in official developmental aid, per capita, than Europe did in the entire Marshall plan after WWII. What was once the richest French colony, which produced 75 percent of the world's sugar by 1789, is today the poorest country in the hemisphere. There are a number of factors that have contributed to Haiti's poverty today: a long history of colonial occupation, US influence and intervention in Haitian governance, forced neo-liberal economic policies, poor media coverage in the US, and a failure of aid money to be utilized for practical programs that directly help build up necessary infrastructure. This paradox will be assessed through a critical historical and political lens, accompanied by an economic comparative analysis addressing the disparity in growth with the Dominican Republic on the other side of the island of Hispaniola, since 1960.

Faculty Sponsor: Sean Swan, Gonzaga University

35B Violence in the Streets: A Comparative Study of the Rise of Organized Crime in El Salvador and Nicaragua
Parker Townley
Gangs known as pandillas have taken root in both urban and rural areas of Central America. This paper will examine the impact of emigration, previous conflicts, political instability, lack of economic opportunity and various social customs in relation to rising violence. This paper will also seek to understand why some countries in Central America have escaped the violence that has plagued others; such knowledge could help provide solutions to issues of chronic violence. In this study El Salvador and Nicaragua will serve as case studies. Both societies were challenged by bloody conflicts during the 1980's and have struggled in recent decades to establish healthy economies and a sense of normalcy; however, Nicaragua has managed to keep control of domestic violence while El Salvador has been seemingly helpless. Policy recommendations will become possible through the comparison and research of these two states and their experiences with gang violence.
Faculty Sponsor: Marguerite Marin, Gonzaga University

35C Hunger in the Developing World: Unstoppable Burden or Solvable Problem?
Marija Vareikate
In today's world, 925 million people are suffering from hunger, particularly in the developing world. The number of people who suffer under hunger is bigger than the USA's, Canada's and the European Union's population combined. Paradoxically, the modern world with the highly developed infrastructure has capacities to produce enough food for everyone who is hungry. However, the numbers of hungry people are still growing. This presentation will identify causes and propose solutions to this global issue. Discussed topics will include historical causes, impact from EU and U.S. governmental policies, food prices, geographical areas, environmental issues and wars. The presentation will propose solutions involving topics such as Western views reconsideration, reforms in governments, increase in commercial agriculture and support of non-governmental organizations (NGO's) that are fighting hunger.
Faculty Sponsor: Annie Voy, Gonzaga University

35D Lessons from a Local Government in Costa Rica
Joshua Willmore
Overview of better ways for the Whitworth Costa Rica Center to work with the community as well as the local government, so as to better relations and work towards more benefits between the two and for all.
Faculty Sponsor: Lindy Scott, Whitworth University

Session 36: APPLIED MATERIALS DEVELOPMENT AND CHARACTERIZATION

Faculty Moderator: Eric Ross, Gonzaga University

36A Chromatographic Evaluation of Ion-Membrane Affinity with Stöber Silica Supported Bilayers
Bryce Kanter
The development of new materials and methods for high performance biomembrane affinity chromatography is important for measuring the interaction of ions and small molecules with biomembranes. The stationary phases we have developed are composed of dynamic lipid bilayers supported within porous particles fabricated from Stöber silica colloids by either spray drying or coacervate polymerization methods. These particles have demonstrated the potential to significantly exceed the capabilities of existing membrane-mimetic stationary phases for characterizing different biomembrane partitioning and binding events. This presentation will focus on our results with the ion channel peptide gramicidin and other pore-forming substances. Ion retention and selectivity on modified lipid bilayer materials is predictable and is eliminated or dramatically reduced in the presence of known channel blockers. Studies aimed at determining the nature of ion retention will be presented. Successful development of these materials could lead to methodology for rapid screening of channel activity under different conditions.
Faculty Sponsor: Eric Ross, Gonzaga University

36B Electrospinning of Copolymers for Fabrication of Alternative Synthetic Prothesis
Joshua Mirabdolbaghi
A non-commercially available electrospinner was designed to weave mats and grafts of the tri-block polymer, styrene-isobutylene-styrene (SIBS). The lab-built electrospinner included the following parameters: polymer concentration, translation rate of needle, voltage of power supply, distance from collector to the needle, and blend ratios of polymers. Grafts and mats constructed with variability between electrospinner parameters and characterized using a scanning electron microscope (SEM) to observe surface morphology and mechanical properties were tested. Parameters for the electrospinning apparatus were optimized using the results from characterization.
Faculty Sponsor: Jeff Watson, Gonzaga University

36C Removal of Fluoride from Water Using Bone Char
Carly Centeio
Excess fluoride in drinking water can lead to severe health problems including skeletal and dental fluorosis. Rural areas in developing countries lack a simple and effective method for removing excess fluoride from water. The use of bone char (BC) as an adsorbent has been investigated as a possible method for household removal of fluoride from drinking water. In order to better understand how fluoride is absorbed by BC, batch tests were performed with BC and fluoridated water. The fluoride concentration and pH were monitored using an Ion Selective Electrode and pH probe respectively. As fluoride concentration decreased, the pH was shown to increase, suggesting that the fluoride is exchanged for an OH- from the hydroxyapatite of the BC. Further studies of the BC composition will be performed using scanning electron microscope and X-ray microanalysis, while the effects of BC on biological contaminant growth will be monitored through membrane filtration.
Faculty Sponsor: Joanne Smieja, Gonzaga University

Session 37: PERSPECTIVES ON HUMAN NEEDS, AUTHENTICITY AND COPING

Faculty Moderator: Stephanie Lindsay, Gonzaga University

37A Narrative, Authenticity and the Self

Joshua Garcia

Throughout most of human history, information and knowledge have been passed from generation to generation through stories. In the digital age where information is easily recorded and knowledge is a click away, what role do stories play in our lives? The study of narrative, authenticity, and the self reveals evidence that the autobiographic narrative process of experience, construct, and act, in relation to past and future stories, are the way humans become and then demonstrate the authentic self. As we order our past experience and develop dreams, goals, and aspirations for ourselves, we strive to be truly authentic. This idea of authenticity becomes how we identify who we are. At this session participants will develop an understanding of the role of narrative in the human experience; the relationship between narrative and the authentic self, and how to begin developing an authentic self-narrative.

Faculty Sponsor: Joseph F. Albert, Gonzaga University

37B Spirituality and Hope in Relation to Coping Styles

Molly Anderson and Diana Petrin

The researchers explored relations among spirituality, hope, and coping strategies. Past research has shown spirituality and hope to be positively correlated to each other and to positive coping outcomes. The present study replicated these linkages and further revealed that spirituality and hope are negatively correlated with maladaptive coping styles.

Faculty Sponsor: Anna Marie Medina, Gonzaga University

37C Physically Researching Maslow's *Hierarchy of Needs*

Madeline Nolan

This project examines the complex theory of Abraham Maslow's *Hierarchy of Needs* and translates it into movement. The research process includes exploring the dancers' reactions to the theory and physically interpreting the body's challenges at each stage. The dance expresses how individuals can move forward, but also digress, how nothing in life is stagnant, and how the needs of every human are demanding and never-ending. The final dance will be presented in March at regional academic dance conferences and publicly reviewed by professional adjudicators.

Faculty Sponsor: Suzanne Ostersmith, Gonzaga University

Session 38: SYNTHESIS AND CHARACTERIZATION OF DRUGS

Faculty Moderator: Matt Cremeens, Gonzaga University

38A Characterization of Designer Drugs

Elizabeth Wehner

The analysis of illicit drugs is essential to forensic chemistry. With the rising number of new designer drugs, there has become a need for initial identification and the preparation of standards for comparison. Recently, a new class of designer drugs, known as "bath salts", has emerged. These drugs typically contain synthetic stimulants that are structurally similar to cathinone. The focus of this study was 3,4-methylenedioxypyrovalerone (MDPV), which has been found in bath salts and is structurally similar to cathinone. This study worked to provide a better understanding of the synthesis and characterization of MDPV, as well as to provide a synthetic template for the synthesis of analogues. The various synthetic and characterization attempts done throughout this study will be discussed.

Faculty Sponsor: Jason Stenzel, Gonzaga University

38B Synthesis of 4,6-diamino-2-(sulfamoylamino)pryrimidine

Emily Engerman

Tuberculosis is an infectious disease that has been a killer for centuries. The causative agent is *Mycobacterium Tuberculosis*. Knockout studies have determined that β-carbonic anhydrase (CA) is an essential enzyme for growth and propagation of the mycobacterium. β-carbonic anhydrase facilitates the interconversion between carbondioxide and bicarbonate. This enzyme was found to have an allozteric regulatory site. Triaminopyrimidine was found to be five times more potent than the natural inhibitor bicarbonate when tested using a model *E. coli* CA system. The nearby enzyme active site contains a zinc atom. A zinc coordinating group attached to the triaminopyrimidine has been proposed as a way of increasing the potency of the allosteric inhibition. Sulfonamides are known zinc chelators so a sulfonamide containing triaminopyrimidine will be synthesized and tested as a way to confirm the coordination hypothesis.

Faculty Sponsor: Eric Ross, Gonzaga University

38C Tautomers and Drugs

Katherine Schwenne

Knowing the tautomeric form of protein-bound ligands is an important facet of drug design. Nuclear magnetic resonance (NMR) and infrared (IR) spectral data were collected for 2H and 13C labeled ligands. Experimental results were compared to theoretical results. Efforts toward the identification of the tautomeric form of a thiazole ligand bound to a protein target are presented.

Faculty Sponsor: Matt Cremeens, Gonzaga University

38D Synthetic Design and Characterization of 3,4-methylenedioxymethamphetamine

Samantha Blake

The topic of this presentation will be the synthetic design of 3,4-methylenedioxymethamphetamine, an organic compound often used as a hallucinogen. The goal of the project was to generate a feasible synthetic process for making this particular organic substance and then to perform methathesis reactions in order to create differing salt forms of the material. Upon completion of these tasks, the three salt forms were then characterized via Infrared Spectroscopy (IR) and Gas Chromatography Mass Spectrometry (GC/MS). These analytical techniques were used in an effort to further characterize the differences seen in banding patterns based on the unique quality of the bonding interaction between the differing chlorine, bromine, and iodine halogens. Results support the hypothesis that as the ionic character of the bonding interaction increased, the banding patterns seen in the IR spectra were distinctly different.

Faculty Sponsor: Jason Stenzel, Gonzaga University

Session 39: SOCIOLOGY OF HEALTH AND WELLNESS

Faculty Moderator: Andrea Bertotti-Metoyer, Gonzaga University

39A Franken Plants: An Analysis of Why the Labeling of Genetically Modified Organisms is Not Required

Kaitlin Asson and Jake Kelly

This project examines why the labeling of genetically modified organisms (GMO) is not a requirement for any food product in the United States. Though the health implications of GM products are still being determined, many scholars and scientists believe that there is some cause for concern regarding their use. Despite these fears, GMO can be found in almost 85% of processed food in the US and there is still no law requiring the labeling of GMO products. This project takes a close look at the proposed legislation for GMO labeling and those involved. We hope to reveal a corporate connection between the creators of GMO and the politicians who have helped in the prevention of creating a GMO labeling requirement thus exposing just how much power a rich corporation has over legislation and United States politicians.

Faculty Sponsor: Andrea Bertotti-Metoyer, Gonzaga University

39B The Blame Game: Obesity and Perceptions of Responsibility

Andrew Cataldo

America is in the midst of what some have called a “thrall of moral panic” concerning the ever growing number of obese individuals, which has led to significant discrimination towards obese individuals. Research on obesity is lacking information on the underlying causes that help form an individual’s belief that obesity is either a result of individual choices or the result of an obesogenic society (or somewhere in between). The goal of this research was to answer that question, as well as to examine the prevalence of these views on a college campus. This study surveyed a predominantly white, liberal arts university in the Pacific Northwest in an attempt to capture the perceptions of students between the ages of 18 and 24. Overall, this study aimed to discover how individuals form beliefs about responsibility and obesity, thus demonstrating where further education might be effective in combating discrimination towards the obese.

Faculty Sponsor: Vikas Gumbhir, Gonzaga University

39C Getting Active! A Program Evaluation of Implemented Physical Activity at Recess

Sinead Christensen & Paige Teichmann

Current public health research demonstrates that most children do not get the recommended amount of physical activity per day necessary for their overall well-being. This lack of activity can lead to obesity, lifelong health problems, and sub-par performance in school. Prior research indicates girls are substantially less likely to obtain a healthy amount of activity during recess, which could be a result of gendered expectations of play as well as spatial and resource domination by male counterparts. Our study assessed whether or not the implementation of organized recess options and addition of new equipment would lead to an increase in overall activity levels. We observed recess at a local Catholic elementary school over a span of three months. The number of boys and girls participating in each activity and degree of physical activity was recorded. This data was assessed to determine overall change in degree of activity.

Faculty Sponsor: Vikas Gumbhir, Gonzaga University

39D Fatty Boom Batty: Cultural Cues and Legislative Hogwash

Peter Froese

There is no question about it: the food we eat is making us sick. It’s not just the food itself; it is the system, from farm to fork. The modern farm, as we know it, is a polluter. The great measures taken to transport this food is a polluter. The processing and distribution of food sends products into the marketplace that are nutritionally lacking and potentially toxic. Finally, the American eater is far from healthy, based on their diet choices. This system, as a whole, is making humans and the earth sick and raises many questions related to social and environmental justice. This paper explores the cultural dynamics that allow such a system to continue while it suffocates the population that utilizes it. Secondly, this paper will examine the various systems of power that are at work, particularly within America but also within the global neighborhood.

Faculty Sponsor: Marguerite Marin, Gonzaga University

Session 40: U.S. AND INTERNATIONAL POLICY AND LAW

Faculty Moderator: Sean Swan, Gonzaga University

40A Wikileaks and Free Speech

Nicholas Halliburton

This presentation will analyze the limits of freedom of the press and free speech in the United States by focusing on the recent conflict between the organization Wikileaks and the United States Government. The presentation will look at the historical legal framework in the United States surrounding the issue with landmark cases like New York Times Co. v United States, and how the rise of the internet complicates matters. The presentation will also weigh the arguments put forward by proponents of both sides, and outline possible models for the future of free speech and the internet.

Faculty Sponsor: Sean Swan, Gonzaga University

40B Conflict of Interest: Comparative Monetary Policies

Jesse Javana

This presentation will be an examination of the several schools of thought on monetary policy. In this presentation I will examine several different financial crises and Fed responses.

Faculty Sponsor: Michael Artime, Whitworth University

40C Space Law: The Final Frontier

Amanda Ramey

Although science and technology have grown logarithmically, international laws on space exploration has lagged behind. The question arises: how should the international legal community respond to the evolving and expanding frontier of space exploration? This presentation will argue that a new treaty needs to be installed in order to regulate the legal and international issues not encompassed in current international space law. It will focus on the growing field of private space industry. First, a brief history of space exploration will be discussed. Relevant policies and treaties in international space law will then be reviewed. Next, the current state of the private space industry will be defined. Then, the issue and inadequacies of the current law will be presented. Last, two primary solutions will be identified and evaluated.

Faculty Sponsor: Kathryn A. Lee, Whitworth University

40D Still an American: Citizenship and Due Process in a Global Warzone

E.B. Vodde

The recent killing of Anwar al-Awlaki has brought critique to the United States' executive branch in what some claim to be unconstitutional treatment of American citizens. Recent proposed legislation regarding expatriation further incites an inquiry into the ideas of citizenship, due process and intrinsic American rights. By examining the case studies of al-Awlaki, Omar Hammami, Yasser Hamdi, Jose Padilla, Mohammed Ismail and others, and including an analysis of legal and executive precedent, a critique of the principle of American citizenship, its corresponding right to due process, and the limitation and jurisdiction of executive action under the aegis of these principles is provided. Ultimately, the conclusion of this article's research contends that, regardless of executive designation or independent action, an American citizen's constitutional rights are what makes the American liberal tradition, and America itself, exceptional.

Faculty Sponsor: Thomas Hawley, Eastern Washington University

Session 41: STRATIFICATION AND INEQUALITY

Faculty Moderator: Marguerite Marin, Gonzaga University

41A On the Fence: College Students' Perceptions of Illegal Immigration

Jessica Luebbering

Since the 1960s, the faces of immigrants to the United States have changed, shifting from predominantly European populations to more ethnically diverse populations, composed primarily of Hispanic and Asian immigrants. This shift caused many Americans to become more aware of immigrants in general, specifically illegal immigrants. Many researchers have investigated the perceptions that Americans have about illegal immigrants, and my work will build on the framework begun by their previous studies, focusing specifically on the opinions of college students at an elite private university in the Inland Northwest. I used a self-administered survey of a representative sample of college students at a private, Inland Northwest university. My research focuses on student perceptions of the effect of illegal immigration and their opinions on immigration policy. I expect that many students will express moderate opinions, but that race, proximity, and religion will be significant factors in explaining their perceptions of illegal immigrants.

Faculty Sponsor: Vikas Gumbhir, Gonzaga University

41B Housing for All

Ashley Martin

This presentation explores why those in poverty have been given an unfair opportunity to access quality housing. This presentation addresses the problems of housing for low-income people by tracing the history of housing in the United States to show who has had access to quality housing and why others have been denied the opportunity. By specifically looking at federal housing law and policies and its effects on poverty in inner cities around the United States I will demonstrate that low-income people, specifically minorities, have not had equal access to housing as White Americans. Also, this research analyzes the current stock of affordable housing in the United States as well as how many people are currently being served by their programs. This research suggests that the federal governments' programs have not done enough to provide housing for low-income people in the United States.

Faculty Sponsor: Marguerite Marin, Gonzaga University

41C The Latino Migrant Worker in Our Nation: The Public Health Consequences of Acculturation through a Marxist Lens

Angeles Solis

The Latino population has become the largest minority group in the United States, and continues to be the most rapidly growing subpopulation within the nation. The U.S Latino migrant population reflects an interesting paradox, because Latino migrant workers entering the country are among the healthiest in America. However, as the duration of their stay progresses, the same workers hold statistically higher rates of heart disease, obesity and diabetes. The presenter will seek to apply Marx's concept of commodity fetish to examine the ways in which our nation's industries can be subject to treating the Latino migrant worker as a commodity. The researcher will study trends within migrant populations in light of Marx's work on isolation and the consequential dire effects on its communities. The presenter seeks to examine the correlation between increased acculturation and the decreased health and well-being of the Latino migrant community, that is, the Latino Paradox.

Faculty Sponsor: Jennifer Holsinger, Whitworth University

Session 42: TOPICS IN PHILOSOPHY

Faculty Moderator: Caroline Fu, Gonzaga University

42A Truth-Bearers

Nathan Smith

An important issue in the philosophy of logic concerns the question, with what sort of thing does logic deal. A concern in this issue is the problem of truth-bearers. In any valid argument, if the premises are true, then the conclusion must be true, so premises and conclusions need to be the kind of thing capable of being true or false. So, framed thus, the focus of this presentation is to investigate what is properly called true or false. Three frequently considered candidates for truth-bearers are sentences, statements and propositions. It is often accepted that one of these is the, or the primary, truth-bearer, and the truth of the others is merely derivative. Herein, I argue that propositions are the best candidates for truth-bearers.

Faculty Sponsor: Debby Hutchins, Gonzaga University

42B Nietzsche's Views on Embracement of the Enemy in Relation to Richard Wagner

Kylie Hannas

Friedrich Nietzsche believes that the “strong” have a very different relationship with their enemies than the “weak”. Instead of hating them, the way the weak do, the strong instead embrace their enemies because these enemies affirm their own strength. This research will examine Friedrich Nietzsche’s relationship with Richard Wagner both before and after the break. It will focus on the admiration that he had towards Wagner before the break and look at how this relationship changed when Nietzsche ended the friendship. Furthermore, through examination of Nietzsche’s essay, Nietzsche Contra Wagner along with other peer-reviewed articles, it will examine whether or not Nietzsche was, in fact, able to embrace his “enemy” for the sake of this essay, the way he suggests the strong should.

Faculty Sponsor: Thomas Hawley, Eastern Washington University

42C Modeling the Aesthetic Axis of Information Organization Frameworks

Paul Ojennus

Designers, users, and theorists make aesthetic judgments of information organization frameworks (IOF). When such judgments are implicit they interfere with the evaluation of IOFs according to other, explicit, criteria, such as economic feasibility, functional requirements, or user orientation. Explicit formulation of aesthetic judgments of IOFs is impeded on two grounds: lack of scholarly tradition of aesthetic criticism of IOFs within the field of information science (IS), and lack of an aesthetic framework from which such a tradition of criticism could draw its principles. The purpose of this paper is to propose a theoretical framework, based on philosophical aesthetics, from which principled assessments of the aesthetic value of IOFs may be conducted. Appropriate discourses within philosophical aesthetics are identified and operationalized as applying to IOFs in an evaluative rubric. Criticism of the project concerning cultural appropriateness is noted and met. The rubric’s viability is tested by applying it to existing IOFs.

Faculty Sponsor: Joseph Tennis, University of Washington

Session 43: FUNCTIONS AND MATHEMATICAL MODELS

Faculty Moderator: Gail Nord, Gonzaga University

43A Collatz Function Variations of the Form x+c

Cullen Grow and Andrew Ritchie

The Collatz function is defined by $C(x) = 3x+1$ if x is odd and $C(x) = x/2$ if x is even. It is conjectured, but remains unproven that any number converges to 1 under iterations of this function. We consider variations of the Collatz function of the form $f(x) = x+c$ if x is odd, and $f(x) = x/2$ if x is even, where c is an odd natural number. The path-count sequence of any such function fits the form of the Fibonacci recurrence relation after a finite number of terms. Convergence properties of the functions are also considered. We show that the x+c functions either converge to 1 or fall into loops under repeated iterations on a given initial value. The functions demonstrate convergence and looping patterns modularly throughout the natural numbers. Functions for which c has a primitive root 2 converge for all initial values except multiples of c. We present theorems and proofs that characterize these properties.

Faculty Sponsor: Nathan Moyer, Whitworth University

43B A Mathematical Model of the Rare Prion Disease Fatal Familial Insomnia

Branden Lowe

Mathematical models have been used extensively to investigate the underlying mechanisms of various systems. In the present model, we employ this method to a relatively new disease, fatal familial insomnia (FFI). Our novel mathematical model emulates numerous characteristics of FFI. These characteristics include a steady loss of sleep over the average clinical course and in the last stages of the disease, total insomnia is present. We inquire into whether the thalamolimbic system is enough to maintain healthy sleep/wake dynamics. The biological basis of the model comes from the ``flip-flop'' conceptual model and a plethora of fatal familial insomnia case studies. The model is not only able to reproduce FFI sleep/wake behaviours, but also able to replicate normal sleep/wake behaviours when the thalamolimbic system is healthy. Analysis of the model provides insight into the possible synaptic connections governing FFI.

Faculty Sponsor: Michael Rempe, Whitworth University

43C Lie Algebras from a Physics Perspective

John Rinehart

The goal of the talk will be to familiarize students with a Lie Algebra. All the bracket properties will be introduced and related to the matrices. Then, a connection will be made between the Lie Algebras and the quantum mechanical nature of commuting observables and the destruction of information.

Faculty Sponsor: Robert Ray, Gonzaga University

43D A Mathematical Model of Stress-Induced Insomnia

Sarah Whittemore

Although stress-induced insomnia is one of the most common sleep disturbances, the biological processes that underlie it are relatively unexplored. Working with the mathematical representations of the ï¬,ip-;ï¬,op and two-process models, we introduced a stressor variable in the form of a differential equation into the system to emulate the timing and characteristics of a stress-induced night of insomnia. A stressor that mimics the growth of the homeostat forces the system into a half-sleep state in which both the wake-active and sleep-active systems are simultaneously ï¬ring. In accordance with human data and results from experiments conducted upon rats, our model exhibits increased sleep latency, fragmentation, and reduced total sleep time. It illuminates the detailed interactions between the sleep homeostat, circadian rhythm, and an external stressor responsible for the stress-induced insomnia phenotype. Analysis of our model and its results yield a deeper understanding of sleep, insomnia, and the potential mechanisms regulating both.

Faculty Sponsor: Michael Rempe, Whitworth University

Session 44: THE SOCIAL NETWORK: THE EFFECTIVENESS OF SOCIAL MEDIA TOOLS

Faculty Moderator: Mirjeta Beqiri, Gonzaga University

44A How Social Media and E-mail Recruitment Tactics Affect Undergraduate Interest in Private Universities

Molly Ferree

Private universities across America saw a 60 percent increase in matriculation rates over the last decade. However, as the cost of higher education continues to rise, admissions counselors at these universities face the challenge of meeting their recruiting targets while often operating on a restricted budget. One emerging trend that counters this problem is to utilize social media and e-mail reminders to promote the university. College admissions counselors are integrating such practices into their recruiting efforts. This study looked at college freshmen and sophomores who might have been subjected to admissions promotions via e-mail and Facebook campaign efforts. A survey was conducted of current freshmen and sophomore students at a liberal arts institution to assess how students responded to such digital promotions. In addition, previous admissions records were used to examine any relationship between when electronic reminders were sent and how many students elicited a positive response.

Faculty Sponsor: Brad Sago, Whitworth University

44B The Effectiveness of the Indirect Promotion on Consumers on Pinterest

Rebeka Lampe

Pinterest, a social media tool that emerged in December of 2009 and went public in 2010, has become a fast growing trend in the world of social interaction, specifically among younger target markets. Through the act of “pinning,” consumers are encouraged to post various pictures that they like under an assortment of categories. These include many company brand products in apparel, design, food, and photography. This has caused an indirect trend of promotion for companies and has allowed more traffic to flow to company websites. This has also impacted the way that consumers behave when purchasing products, which they have already seen on Pinterest. A study was conducted to show the use of Pinterest, as well as the purchasing behavior it provokes, for both men and women consumers between the ages of 18-30 years old. A group of college students as well as a group of young adults was surveyed.

Faculty Sponsor: Brad Sago, Whitworth University

44C The Effectiveness of Using Facebook Event Invitations to Influence Event Attendance of Traditional-Age University Students

Crystal Nelson

Facebook had approximately 483 million daily active users as of December 2011. With access to the social networking site, users are reminded on a daily basis of events they have been invited to and plan to attend. The invitation appears on the home page as a reminder with the date and time of the event. The goal of this research was to determine whether users were more likely to attend an event after receiving a Facebook invitation than those who had not received one or had received another form of invitation to attend. Businesses and organizations can use this information for coordination and planning of events. A study was conducted among traditional-age university students (ages 18-24) asking them to recall events they had received invitations to. The study examined which events the users had received a Facebook invitation to attend and which ones they actually attended as a result.

Faculty Sponsor: Brad Sago, Whitworth University

44D How Facebook Can Be a College-Aged Student's Number One Source for Worldly Information

Gilbert Sandoval

Facebook is a popular and a rapidly growing social media tool that captures the attention of 70% of Americans. Many of today's most popular newspapers have Facebook pages and can update users who like the page with daily news articles that are also in the newspaper, specifically stories that would appeal to younger targets. This research studied the importance of knowing current events as a college-aged person and if articles on Facebook prove to be effective and convenient. It was hypothesized that college-aged Facebook users ages 18-23 use social media to gain information about current events and news more than any other media outlet. Thorough surveying, the reactions of college-aged students to use Facebook as a primary source to gain their news from current events was measured and analyzed.

Faculty Sponsor: Brad Sago, Whitworth University

Session 45: THE ECONOMICS OF WAGES, CRISES AND ATHLETICS

Faculty Moderator: Erica Johnson, Gonzaga University

45A College Football Scandals and Athletic Giving

Matthew Grover

College football fans across the country worry about other colleges when news of a scandal breaks. Colleges try to limit the damage done to the school and its reputation. The affected college could look to projections of whether their athletic department will receive the same amount in giving, but some might focus more on damage control than what giving levels could be in the future. The paper will look at variables that might affect the levels of giving the college would see in the future (and whether or not post-scandal giving levels will return to pre-scandal giving levels) and to test to see if there is a drop in giving levels due to the scandal.

Faculty Sponsor: Erica Johnson, Gonzaga University

45B Exploring the Causes of the 1994 Mexican Peso Crisis

Nigel McClung

This presentation discusses the economic and political factors that contributed to the Mexican currency crisis of 1994. The relevant contributing factors to the crisis are identified through probit regressions. These regressions analyze the effects of real exchange rates, foreign direct investment, bank reserve to bank asset ratios, and a variety of other economic indicators on the peso crisis of 1994. Regression results are interpreted in relation to the historical and political literature on the policy agendas of the Mexican P.R.I.

Faculty Sponsor: Erica Johnson, Gonzaga University

45C An Analysis of Quarterback Prospects in the NFL by Wonderlic Results.

Kylen Stevenson

Evaluating quarterbacks in the National Football League is a difficult, and often contentious task. Luckily the NFL has several different tests for potential future players. Among the mostly physical tests the Wonderlic stands alone. A cognitive ability test, it is supposed to shed light on a potential player's intelligence. The question is whether or not this test is a good indicator of a quarterback's on field performance. By analyzing several years of data on Wonderlic scores, on field performance, and compensation I hope to answer this question, and in the process shed more light on how football teams should make personnel decisions.

Faculty Sponsor: Erica Johnson, Gonzaga University

45D Benefits of Graduation on NFL Salary

Daniel Seubert

The intent of my research project is to look at the relationship between the contracts received by first round NFL draft picks who graduated verse those contracts of first round draft picks who did not graduate. The NFL does not require college athletes to graduate from college to enter the draft but my hypothesis is that there is a positive correlation between graduating from college and receiving a higher NFL salary then those players who did not graduate before entering the draft. I intend to use econometrics to construct an empirical model, and then test that model in order to determine if there is a statistically significant relationship between graduating from college and receiving a higher NFL salary.

Faculty Sponsor: John Beck, Gonzaga University

Session 46: WOMEN IN PHOTOGRAPHY

Faculty Moderator: Meredith Shimizu, Whitworth University

46A Body of Neshat

Allison Schiesser

In 1979, four years after Shirin Neshat left her home, the Iranian Revolution began and life in Iran began to change. Upon completing her studies Neshat moved to New York City. In 1990, after 15 years away from her homeland, Neshat was permitted to return to Iran and took the first chance she got. In 1996 the Women of Allah series was exhibited and considered her first mature body of work. This set of black and white photographs featured women wearing the black chador and received high acclaim and respect. However, these stunning images of Neshat's body in cultural dress follow an old pattern of sexualizing "the other". The covering causes one to question, "What's underneath?" Neshat fetishizes herself in the countless images she has taken of her body for the Women of Allah Series.

Faculty Sponsor: Meredith Shimizu, Whitworth University

46B Tina Modotti: Through the Eyes of the Other

Jill Smith

Much of what is “known” about 1920s photographer Tina Modotti has been created by the stories of others. These legends have obscured her image, turning her into straight photographer Edward Weston’s exotic sidekick. But truthfully, Modotti became a photographer through the exertion of her own strong will, with her own clients, through her own methods, and with her own vision. Even so, there is a tendency to filter Modotti through the lens of Weston and to divide her life into periods based on the four men with whom she associated herself, solidifying her role as the “Other” in both gender and ethnicity. Consequently, it is by examining the differences between the photographs of Tina Modotti and her male contemporaries through which we can see visual manifestations of the artist’s “Otherness” and its undeniable contribution to the success of her more famous and striking photographs of the Mexican working class.

Faculty Sponsor: Meredith Shimizu, Whitworth University

46C "Faces I Could Not Pass By": Margaret Bourke-White's Documentation of Human Suffering

Sarah Scoon

Margaret Bourke-White’s photographic career spanned three decades, forty-five countries, and more than one million miles. A fiercely determined and stubborn character, Bourke-White was a woman of historical firsts, clearing a path and opening doors for women and photojournalists everywhere. Her career took her to the furthest corners of the earth – through combat zones, developing nations, brutal weather conditions, social and political unrest, and countless interactions with people of every type, from world leaders to civilians. Her photographs brought awareness to global issues, and became engrained in American historical culture. Though Margaret Bourke-White’s career was extensive and groundbreaking in many ways, her greatest significance lay in her unwavering dedication to capturing and communicating the human condition, focusing on the universal experience of pain, loss, and suffering.

Faculty Sponsor: Meredith Shimizu, Whitworth University

Session 47: HISTORY, CULT and CULTURE

Faculty Moderator: David Oosterhuis, Gonzaga University

47A The Mythology, Practices and Archaeology of the Cult of Asclepius

Leah Marley

The Cult of Asclepius, though a young cult comparatively in the Mediterranean was widely and commonly accepted throughout the Classical world and endured into the early Christian period. The origins, cloaked in divine mythology gave rise to a cult centered around mystical healing practices. With several major centers and temple sites ringing the Mediterranean, the cult held the favor of the common people and Roman emperors alike. I will examine the cult of Asclepius in its entirety, from the mythological and literary origins, the practices, rise and popularity associated with it, as well as the archaeological sites themselves and the information that can be gleaned from them.

Faculty Sponsor: Andrew Goldman, Gonzaga University

47B Witches' Black Sabbaths & Other Perversions of the Sacraments in Early Modern Britain

Monica Stenzel

This paper will compare the maleficia of fictive witches of seventeenth-century England to the seven sacraments of the Catholic Church. Scholar Gary Wills has proposed that following the Gunpowder Plot of 1605, English plays portrayed witches with distinctive Catholic elements. Brian Levack has proposed a “Cumulative Concept of Witchcraft”, and the assertion that the oft-referenced witch-crime of cannibalistic infanticide was perceived as a perversion of the eucharist. By combining these ideas, I propose that all seven sacraments of the Catholic Church are represented in an 'inverted' or evil version in English popular culture, and that this helped to define Catholics in the newly Protestant country.

Faculty Sponsor: Ann Le Bar, Eastern Washington University

47C The Road that Led to a Slave Society: The Rising Slave Population During the Roman Republic that Induced a Slave Dependent Civilization, 509-27 B.C.

Anthony Austin-Walker

This research explores the institution of slavery during the Roman Republic and discusses how Rome became a slave society, ultimately leading to the devaluing of slaves. During the Early Republic, slavery had yet to become commonplace but towards the middle and late eras became prominent. Not only did the methods of slavery change, but laws and statues were formulated around this practice. By the time of the Late Republic, Rome became a slave society and by the dawn of the Empire, slavery was an accepted and major part of Roman civilization. This change was primarily due to the expansion of slavery within Rome as a result of military conquest. This research also examines the central aspects of Roman slavery such as how it was conducted and the frequency of the institution. The information contained in this paper utilizes primary sources and relies heavily upon scholarly insight from esteemed scholars.

Faculty Sponsor: Georgia Bonny Bazemore, Eastern Washington University

Session 48: THE PERSONAL EFFECTS OF DISCRIMINATION

Faculty Moderator: Amani El-Alayli, Eastern Washington University

48A "What Was Your Name Again?" Are Muslims Treated Differently When Seeking Housing?

Matthew Johansen and Ty Finkas

Civil rights violations against Muslims in the U.S. have increased since the Oklahoma City bombing of 1996, reaching thousands per year. Of the 167 reported hate crimes in US in 2006, only 33 of them were related to housing discrimination. We examined the possibility that housing discrimination was occurring in very subtle ways. It was predicted that potential Muslim renters would receive less encouraging information (e.g., volunteering less information and being less friendly) from sampled rental agents. Property managers were called in Spokane, WA and Boise, ID by males and females assuming either a Muslim sounding name or Christian sounding name. The agents provided less encouraging information towards Muslim males but more encouraging towards Muslim females. This research can be used to emphasize the importance of examining subtle forms of discrimination rather than just blatant forms.

Faculty Sponsor: Amani El-Alayli, Eastern Washington University

48B Experiencing Discrimination: Stronger Group Identification among Multiple Minority Group Members

Andrew McCall

Research has found that people identify with their ethnic groups more when they belong to an ethnic minority, than when they belong to an ethnic majority. We suspect that having more experiences with discrimination could contribute to this stronger group identification. We therefore predicted that individuals belonging to multiple minority groups will identify more strongly with any given minority group. Specifically, we expected women to identify more strongly with their gender if they also belonged to other minority groups. Additionally, we examined whether people's minority group identification is generally stronger than their majority group identification. Since group identification is thought to have many psychological benefits for minority members, it is important to identify correlations with increased identification. Roughly 250 college students reported their group memberships and then completed group identification measures for their gender, sexual orientation, ethnicity, and religious groups. Data for this study are currently being entered for analyses.

Faculty Sponsor: Amani El-Alayli, Eastern Washington University

48C The Effects of Discrimination on Trait Reactance: A Study from the Thesis of Nathaniel S. Wareham

Wyatt O'Dell and Chelsea Joynes

Psychological reactance is when somebody feels the need to push against limits that are set on them simply to prove to themselves (or others) that they have the power of free will. In the event that people are denied certain things they feel entitled to, they may experience psychological reactance. Trait reactance is when this develops into a personality type. The present study states that when people are continuously exposed to discrimination over the course of their lives, they are more likely to develop trait reactance. College student participants completed self-report measures of how often they get discriminated against and of trait reactance. The results revealed some positive correlations between discrimination frequency and trait reactance. This could be an important finding that may help better understand the "guarded" therapy client, and what may be causing their psychological reactance.

Faculty Sponsor: Amani El-Alayli, Eastern Washington University

Session 49.1: AFTERNOON POSTER SESSION 1

Faculty Moderator: Christy Watson, Gonzaga University

49.1A The Children of Roatan Honduras

Elizabeth Anderson

As Ernie, the two year old boy, sat down quietly on the floor to discover his new nutritional flip-book it was apparent that I had made a small, but important difference. Ernie had been born to a young teenage mom living in Roatan Honduras. Ernie's mom had acknowledged that life would be hard raising a small child in a third world country, so she reached out to a non-profit, non-government organization. Partners in Education Roatan (PIER) has successfully brought together the teenage moms of Roatan in order to provide education and guidance. When I was presented with the opportunity to educate these young women, and their children, about proper nutrition and exercise I was honored. Without hesitation I began to create educational tools for the mothers. The books and advice were well received, and I see my journey with them as only just begun.

Faculty Sponsor: Susan Kynast-Gales, Washington State University

49.1B The Effects of Contingent Rewards on the Decrease of Improper Verbalizations of Middle School Students with Learning Disabilities

Evan Anderson

The purpose of this study was to implement a contingent rewards system to reduce the number of improper verbalizations made by two special education high school students. The effectiveness of the intervention was examined in an ABAB design. The participants were two, eighth grade males with learning disabilities. The study was conducted in a middle school resource room in a rural school district. The behavior measured was the number of inappropriate verbalizations. Our results indicated a reduction in the number of improper verbalizations through the use of the contingent rewards system. The number of improper verbalizations increased during a brief return to baseline. The benefits of employing this procedure to reduce the number of inappropriate verbalizations was discussed.

Faculty Sponsor: T. F. McLaughlin, Gonzaga University

49.1C The Effects of Using Augmentative and Alternative Communication to Teach a Preschool Student with Developmental Delays to Respond and Request Appropriately

Brianna Armstrong

The purpose of this study was to evaluate the effectiveness of augmentative and alternative communication (ACC), specifically a Flip n' Talk, with a preschool child thought to be on the autism spectrum. The ability to functionally request assistance and respond appropriately within a daily routine was the focus for this study. A multiple baseline design was employed to evaluate the intervention. The results of this study indicated that the Flip n' Talk (i.e. ACC) was an effective way to teach functional communication.

Faculty Sponsor: T. F. McLaughlin, Gonzaga University

49.1D The Effect of Direct Instruction Flashcard Procedure on Mastery of Basic Sight Words by an Elementary School Student with a Behavior Disorder

Megan Baker

The purpose of this study was to determine if a 10-year-old student with behavior disorders and learning disabilities could benefit from the use of DI flashcard procedure to improve his sight reading skills in a special education classroom. During each session, the student would practice 14 sight words (seven new words and seven mastered words) until he could correctly read each one. The student was then rewarded with 20 minutes of computer or drawing time for his cooperation and hard work. In the beginning of the study, the student could read almost none of the 21 target words presented, but by the end of the study the student was able to read every word. The intervention was effective in improving the student's reading skills. The procedure was cost effective and required little training to implement.

Faculty Sponsor: Randy Williams, Gonzaga University

49.1E The Pend Oreille Fold and Thrust Belt

Peter Balholm and Travis Taylor

In northern Stevens County lies the newly-discovered Pend Oreille Fold and Thrust Belt. It holds clues to the assembly of North America, in particular the accretion of the Quesnel terrane to the paleocontinent of Laurentia. Investigators mapped and measured this fold and fault zone, confirming earlier broad mapping and shedding light on a complex series of tectonic events.

Faculty Sponsor: Andy Buddington, Spokane Community College

49.1F The Effects of Direct Instruction Flashcards and a Model, Lead, Test Procedure on Letter Recognition for Three Preschool Students with Documented Developmental Delays

Sarah Bechtoldt

The purpose of this study was to evaluate the effects of Direct Instruction flashcards and the model, lead, test procedure, to teach the letters in three participants' first and last names. All three of the participants were preschool students with disabilities. The study was conducted in a self-contained special education preschool classroom, located in the Pacific Northwest. The number of letters varied, as each student's first and last name contained different letters and the length of each first and last name varied. During baseline, student performance was low across all three participants. However, one participant reached mastery of the letters in the first name quite early in the study. He was then taught to recognize his letters in his last name. The other two participants showed improvements throughout the course of the investigation. The direct instruction flashcards used in this study were easy to implement, inexpensive, and not time consuming.

Faculty Sponsor: T. F. McLaughlin, Gonzaga University

49.1G Chimpanzee Sound Production

Allyson Binversie and Jenna Lochner

Humans vocalize quite frequently and in fact could accurately be described as the noisy ape. At times humans engage in almost incessant noise production. What about chimpanzees, our sibling species? Watch a National Geographic video and chimpanzees are often seen and heard charging through the forest; males pant hooting, breaking branches and charging while the other members of the community scurry in various directions, often screaming. However, Jane Goodall describes times when she has walked through the forest not hearing the forty chimpanzees in the overhead canopy. Casual observation of chimpanzees at the Chimfunshi Wildlife Orphanage Trust (CWOT) sanctuary suggests that chimpanzees are quiet. Systematic data was collected at CWOT over the month of May 2011. Sixty-seven chimpanzees were observed daily. This study analyzed the amount of time that chimpanzees produced any type of sound. We discovered that these chimpanzees are actually quiet creatures.

Faculty Sponsor: Mark Bodamer, Gonzaga University

49.1H Confirmation of the Presence of the Hepatocyte Growth Factor Receptor (HGF) Gene in Rat Hippocampal Tissue

Tyler Bland

The c-Met proto-oncogene is a gene that activates production of the hepatocyte growth factor receptor, which binds the ligand HGF. Once bound, the receptor becomes a vital step in many responses, including mitogenesis, morphogenesis, and anti-apoptoic activity. Research by Shimamura et al. has additionally suggested that overexpression of the HGF receptor correlates to increased memory and learning of rat subjects. This study confirms the presence of HGF receptors in hippocampal tissue by a fluorimetric gene expression assay for the c-MET gene. It was determined that HGF receptors are being transcribed in rat hippocampal tissue, but not as much as the control gene peptidylprolyl isomerase A. This study provides a link between HGF receptors and the hippocampus which may provide the groundwork to link HGF overexpression in the hippocampus to increased memory and learning.

Faculty Sponsor: Finn Pond, Whitworth University

49.1I The Effects of a Model, Lead, and Test Procedure to Teach Letter Name and Sound Identification to Elementary School Students with Learning Disabilities

Laura Bulkley

The purpose of this study was to assess the model, lead, and test (MLT) procedure on the letter name and sound identification performance for two elementary students. The two participants were diagnosed with learning disabled in math, reading, writing and communication. One of the two students also had behavior goals. The study took place in a resource classroom located in a public school in the Pacific Northwest. A multiple-baseline across letter sets was employed to assess the effectiveness of the model, lead, and test procedure. The behavior measured was correct letter name and sound identification. The results showed mastery of all letters of the alphabet by the participants when the model, lead, and test procedure was employed. The present outcomes replicate those of previous research and were easy to implement and assess by the classroom personnel.

Faculty Sponsor: T. F. McLaughlin, Gonzaga University

49.1J An Analysis of the Reinforcing Value of Cigarettes and e-cigarettes among Nicotine-dependent Cigarette Smokers Using the Multiple Choice Procedure: A Gender Comparison Study

Arlana Byers

Electronic cigarettes (e-cigarettes) have been marketed as an alternative to cigarette smoking; however, there is a paucity of research literature about these devices. The Multiple Choice Procedure (MCP) was used to evaluate the reinforcing value of e-cigarettes among nicotine-dependent males and females when compared to money or use of their usual cigarette. Twenty-three e-cigarette naive adults (18 males, 5 females) who were not attempting to quit smoking were evaluated. Participants completed two smoking sessions (cigarette and e-cigarette) and three MCP sessions where they chose between cigarette, e-cigarette, and money. While participant preference for cigarette was higher than e-cigarette, the differences in reinforcing value on the MCP indicate that males found cigarettes to be a more powerful reinforcer than e-cigarettes while females found them to be the same. The comparison between genders shows that females have more cravings reactive to smoking-related cues, along with having different in smoking expectations.

Faculty Sponsor: Donelle Howell, Washington State University

49.1K The Differential Effects of Direct Instruction Flashcards and Math Racetrack to Teach Numeral Identification with Two Preschool Students with Developmental Delays

Anna Chandler

The purpose of this study was to evaluate the effects of a Direct Instruction (DI) flashcard system and math racetrack system to teach the numerals 1-9 to two preschool students. Both were young children with disabilities. The study was conducted in a self-contained Special Education preschool classroom. Nine numerals were presented to the participants to be learned. During baseline each did not know their numerals. Both students showed mastery across Set 1 but not across any other sets. When DI flashcards were added to the math racetrack system, student performance improved. Our procedures were inexpensive but somewhat time consuming. Overall the procedures were an easy intervention to implement.

Faculty Sponsor: T. F. McLaughlin, Gonzaga University

49.1L Gait in Children with Cerebral Palsy Before and After an Equine-assisted Therapy Session Compared to Gait in Non-cerebral Palsy Children

Taylor Colvin, Rachel Rosedale and Tanya Tjoelker

This study aims to compare the walk of children with cerebral palsy (CP) before and after an equine-assisted therapy session to the walk of children without CP. We hypothesize that the walk of children with CP after the therapy session will be more similar to the walk of a non-CP child. We will be recording the pelvic movements at a walk of a CP child before and after hippotherapy. They will be recorded on video from the dorsal and lateral views, analyzed frame-by-frame, measured for pelvic shift and pelvic tilt, and then compared to the movements of our controls. The potential benefits of this study are a better understanding of the benefit of equine-assisted therapy for children with CP and possibly laying groundwork for further research on the therapeutic effects of horseback riding.

Faculty Sponsor: Michael Sardinia, Whitworth University

49.1M Cracking the Claw: Analysis of Morphological Traits and Wave Energetics in Fiddler Crabs

Marshall Davis

The male fiddler crab (genus Uca) uses its oversized cheliped as a signaling flag to attract females and as a weapon to fight off competing males. This dual purpose introduces contradictory selective pressures in that a signaling claw should be light weight and noticeable, whereas a weapon should be strong and robust. My research examines the resultant variation in wave characteristics and energetic commitment amongst different fiddler crab species.

Faculty Sponsor: Brook Swanson, Gonzaga University

49.1N Emotional Regulation and Time Perception

Derek Ellis

365 participants (Mage = 20.34, SD = 4.45) completed this experiment. Participants were assigned to either a retrospective or prospective paradigm and were requested to either suppress their emotions or to experience their natural emotions. Participants watched a 9-minute, 20-second scene from Gorgeous, depicting a martial arts fight scene. After viewing the clip, participants were asked to estimate the film's duration in minutes and seconds and complete a brief measure of mood (i.e., PANAS). Individuals who were not informed that they would be required to estimate time (i.e., retrospective paradigm) were more accurate judging time duration than those that were informed that they would have to estimate the film's duration (i.e., prospective paradigm). However, there was no effect of emotional regulation on time estimation accuracy. That is, individuals that suppressed their emotions provided time estimates that were statistically similar to individuals who experienced natural emotional reactions.

Faculty Sponsor: Jonathan Anderson, Eastern Washington University

49.1O Local Environmental Knowledge on South Caicos, Turks and Caicos British West Indies

Marcus Eschelbach

South Caicos heavily relies on the fishing industry for direct and indirect livelihood. In recent years the fish populations have been in decline, threatening South Caico's main means of income. By use of local environmental knowledge (LEK), one can quickly and affordably gather information from indigenous inhabitants. This study seeks to find if the perception of marine resource conditions is affected by differing demographic factors on South Caicos. Through structured survey interviews, it was found that there is no correlation between the perception of environmental resource conditions, and demographic variables on South Caicos. The collection of knowledge on South Caicos varies widely between different age groups, ethnicities, and occupations; through the use of LEK one can obtain a better understanding of the dynamic knowledge base on South Caicos. With this information, one can discover how to educate the community effectively on the dangers of the diminishing fish populations.

Faculty Sponsor: Nancy Staub, Gonzaga University

49.1P The Use and Frequency of Pointing in Cross-Fostered Chimpanzees

Christopher Galeucia

Videotaped interactions between cross fostered chimpanzees and a long time social companion were reviewed. The chimpanzees used the signs of American Sign Language (ASL) to communicate with human companions as well as to communicate with each other. Casual review of these tapes showed that it appeared that the chimpanzees often used a pointing gesture. We use pointing frequently to indicate location and direction of items. There are some studies that report that pointing is part of the chimpanzees' behavior. However, there are still others that argue that pointing is a uniquely human behavior. This study systematically analyzed the video record for instances of pointing. Frequency across chimpanzees as well as an attempt to determine the utility of this behavior for our sibling species is discussed. Taking on the humble ethological perspective of show me, allows the chimpanzee the opportunity to show us even more than we imagined.

Faculty Sponsor: Mark Bodamer, Gonzaga University

49.1Q Reduced Statin Inhibition as Evidence for Characterization of Class II Bacterial HMGR

Sam Gordon

The enzyme 3-Hydroxy-3-Methylglutaryl Coenzyme A Reductase (HMGR) is a protein essential for several biochemical reactions found in many forms of life. Humans and other eukaryotes utilize class I HMGR as a step in the synthesis of cholesterol. Many bacteria and archaea use class II HMGR as the first committed step in the mevalonate pathway for the synthesis of isoprenoids, an essential structural biomolecule. Despite similar structure and function, the two classes of HMGR exhibit greatly different levels of inhibition in response to statin drug. In humans, statins are used medicinally to lower cholesterol. For the purpose of this research, levels of statin inhibition can be used to help characterize a particular HMGR as either class I or class II. The experiment seeks to use levels of reduced inhibition in response to the statin Simvastatin to provide further evidence that the HMGR currently being classified is in fact class II.

Faculty Sponsor: Jeff Watson, Gonzaga University

49.1R Classification of Gluten-Free Beer by Headspace Solid Phase Microextraction and High Performance Liquid Chromatography

Phillip Inouye and Erick Huntley

Celiac disease, which causes damage to the small intestine and interferes with absorption of nutrients from food, has increased the availability of gluten free and low-gluten products, including beers, in the United States. It has been noted that there is a distinct difference in the flavors associated with the fermentation products produced when malted barley and wheat are absent. Since flavor is composed of both aroma and taste, the differences in the chemical profile in both the liquid and vapor of the beer has been investigated. The aroma profile has been explored using solid-phase microextraction followed by gas chromatography mass spectroscopy, while reverse phase HPLC was used to analyze the compounds found in beer. Several different source grains, amaranth, buckwheat, millet, quinoa, and barley, were used to produce different fermented beverages. The differences in the chemical profile of gluten-free beverages and barley based beverages have been developed.

Faculty Sponsor: Drew Budner, Whitworth University

49.1S Inhibition and Crystallization of β-Carbonic Anhydrase

Konner Jackson

One approach to developing novel antibiotics is targeting essential enzymes of a particular pathogenic species. Bacterial carbonic anhydrase, an enzyme that catalyzes the interconversion between CO_2 and bicarbonate, presents a promising target. This enzyme plays an important role in components of cell membranes; in some bacterial species, growth and propagation depend on carbonic anhydrase activity. The progress of research geared toward inhibition of *E. coli* carbonic anhydrase (ECCA) is reported here. Previous work identified 4,5-dibromoimidizole (DBI) in a virtual screen for potential ECCA inhibitors, and verified *in-vitro* inhibition of ECCA by DBI. Crystallization of ECCA in the presence of DBI was performed for visualization of the enzyme-inhibitor complex with x-ray diffraction techniques. Diffraction data was used to calculate electron density maps, suggesting that DBI does indeed bind at the predicted target site of the ECCA molecule. Further work is underway to confirm this result, and to improve inhibitor binding affinity.

Faculty Sponsor: Jeff Cronk, Gonzaga University

49.1T Method Development for Aroma Profiles of Volatiles Produced in the Fermentation of Gluten-Free Beverages

Tom Kang

Celiac disease, or gluten intolerance is a condition that has become quite common. Though more gluten-free beverages are available to consumers, there is the absence of certain aroma and taste that are present in their regular counterparts. As both aroma and taste make up the flavor, this research explored the different volatile components of aroma in order to compare and contrast regular malted beer and gluten-free beer. The volatile compounds of each type of beer were collected via headspace extraction using solid-phase microextraction (SPME) fiber. The extraction was optimized mainly through adjusting the extraction temperature and time as well as altering the fiber type. Internal standards were used in order to quantify the amount of volatiles present in beer. Though the findings achieved through GC/MS were not yet definitive to make any final conclusions, four common volatiles in beer, isoamyl acetate and phenethyl alcohol, differed quantitatively.

Faculty Sponsor: Drew Budner, Whitworth University

Session 49.2: AFTERNOON POSTER SESSION 2

Faculty Moderator: Christy Watson, Gonzaga University

49.2A Phagocytotic Tendencies in *Tetrahymena pyriformis*

Joseph Belke

Tetrahymena pyriformis are free-living, single-celled, ciliated, protozoans which take advantage of phagocytosis as a method of consuming nutrients (Csaba and Darvas, 1992). Tetrahymena use their cilia to beat particulates into the cytopharynx, where vesicles are formed containing the particulate. These vesicles are also called vacuole, or phagosomes. After the vacuoles pass through the cell, the digested remains are excreted across the cell membrane (Sallusto and Baggiolini, 2008). Macrophages use phagocytosis to consume food and particulate from their environment, and can be beneficial to other organisms. Leukocytes are an example of this, as they phagocytose bacteria and harmful pollutants from the blood stream (Sallusto and Baggiolini, 2008). Leukocytes and other macrophages are thought to utilize a similar method for phagocytosis, but they are hard to obtain and study; Tetrahymena however, are readily available and easy to grow and thus represent a model system in which to test phagocytotic tendencies of phages.

Faculty Sponsor: Robert Prusch, Gonzaga University

49.2B The Discovery and Isolation of Four Novel Bacteriophages

John Henderson, Ellie Toscan, Mariah Minder and Ashley Connors

Bacteriophage are the most abundant and diverse organisms on earth. They are viruses that infect bacteria. The purpose of this study was to isolate novel bacteriophages that specifically infect *Mycobacterium smegmatis* so we could contribute to the overall knowledge of bacteriophage diversity. The phage were isolated from the soil and purified using plaque purification. We isolated four novel phages. We observed plaque morphology, performed DNA isolation analysis, and examined Transmission Electron Micrographs and concluded that we each had a novel phage. Phage research is part of a growing field which contributes to medical advances and a better understanding of our world. The genome of the bacteriophage Sisi was sequenced so that it could be annotated and compared to other bacteriophage genomes.

Faculty Sponsors: Marianne Poxleitner and Kirk Anders, Gonzaga University

49.2C Free Speech and the Internet

Joshua Kellems

Freedom of speech is an inalienable right of United States citizens. Unfortunately that right is not extended to citizens of all countries. Over the last few years, many people have begun to question whether or not free speech extends to the internet and if so, in what capacity? While the debate rages on in our country, others are not so fortunate as they are stripped of their right to speak out over the internet. The last few years have shown us the power of the internet in spreading ideas and bringing people together to stand against repression in the Middle East. But what happens when that medium of expression is taken away? This project is meant to show how freedom of speech on the internet is a fundamental aspect of our ability to express ourselves and the dangers that can arise when it is taken away or censored.

Faculty Sponsor: Sean Swan, Gonzaga University

49.2D The Bioinformatics of the Bacteriophage Sisi Genome

Dave Lee and Erin Lapsansky

There are approximately 10^{31} phages in the world. Analysis of bacteriophage genomes reveals much diversity. We report analysis of the genome of Sisi, a mycobacteriophage isolated in our lab. We applied bioinformatics analysis through use of the computer programs DNA Master, Phamerator, and the Basic Local Alignment Search Tool (BLAST) with the NCBI database. In characterizing the genome, we discovered that Sisi is 56 kilobasepairs in length, has approximately 100 genes, and that most of the structural genes on the left side of the genome were far more conserved than the non-structural genes on the right-hand side of the genome. The DNA sequence of Sisi contains differences compared to all the sequenced phages to date, and it is therefore a novel phage.

Faculty Sponsors: Marianne Poxleitner and Kirk Anders, Gonzaga University

49.2E The Effects of Flashcards and Math Racetrack on Multiplication Facts for Two Elementary Students with Learning Disabilities

Katlin Lund

The purpose of this study was to evaluate the effects of a Direct Instruction (DI) flashcard system paired with a math racetrack to teach basic multiplication facts to two elementary students diagnosed with learning disabilities. The study was conducted in a resource room that served intermediate-aged elementary students. The school was located in an urban school district in the Pacific Northwest. Targeted math facts were chosen based on the students' scores from a pretest. The effects of the DI flashcard procedure were evaluated in a multiple baseline design across sets of problems. Both participants improved their mastery of multiplication facts. The flash card procedure was inexpensive and easily implemented in a resource room setting.

Faculty Sponsor: T. F. McLaughlin, Gonzaga University

49.2F The Effects of the Direct Instruction Flashcard Procedure on Mastery of Multiplication Facts by Two At-Risk Elementary Students

Colleen Meyers, Rebeccah Talboy, Devon Lilley and Alyson Lykken

The purpose of this study was to determine if two girls in a math resource room who were at risk for learning disabilities could benefit from the combined use of a Direct Instruction flashcard system and contingent praise. A single subject multiple baseline design showed a functional relationship between the Direct Instruction flashcard system combined with the contingent praise and increased mastery of multiplication facts. By the end of the study, both participants had mastered almost all of their target math facts. Additionally, the students' confidence in their math class seemed to grow as their mastery increased.

Faculty Sponsor: Randy Williams, Gonzaga University

49.2G Effects of Culture on Morality and Disgust

Alyssa Miller

Culture's effects on psychology have been debated for decades. This research sought to discover if a study concerning morality and disgust conducted by Eskine, Kacinik, and Prinz (2011) is applicable to the culture of New Zealand. The researchers found that participants who ingested a bitter beverage rated the moral situations more harshly than those who ingested a sweet or neutral beverage. Undergraduate students from Massey University were given a bitter, sweet, or neutral beverage and rated six moral vignettes on how wrong and disgusting they seemed. The effect in the American study was not found in this study. This led to discussion concerning New Zealand's bicultural environment and its effects.

Faculty Sponsor: Noel Wescombe, Whitworth University

49.2H Examining the Beliefs and Values of Education, Literacy, and Achievement in a Multicultural Immigrant Community in the US: Action Research to Create a Culturally Responsive Family Literacy Program

Kathleen Nollenberger

This research, while still in its beginning stages, will look at the perceptions, beliefs, and values of education, literacy, and achievement. The target audience for this research is English Language Learner students and their families at a local area high school. The research findings will be used to create a family literacy day.

Faculty Sponsor: James Hunter, Gonzaga University

49.2I Studies of Strain Dependent Antibacterial Activity of Peptides

Jennifer Odegard

Melittin is a well-studied antimicrobial peptide whose proposed antibacterial mechanism of action involves membrane pore formation, which suggests broad activity against the same species of bacteria. Preliminary results for minimal inhibitory concentrations of melittin against *E. coli* show strain sensitivity; inhibition was detected in one strain but not another for one case. We present current results from experiments aimed to assess the degree of strain dependent inhibitory and lethal concentrations for melittin and magainin II against Gram positive and negative bacteria.

Faculty Sponsor: Matt Cremeens, Gonzaga University

49.2J Histology of Anurian Integument in the Detection of Bd

Jenna Peterson

Amphibian populations are declining due to the parasitic fungus *Batrachochytrium dendrobatidis* (Bd) which is transmitted at optimal temperatures and moist environments between hosts and encysts in the epidermis. Bd degrades the integrity of the epidermis and leads to cardiac arrest by a pathway not completely defined. To detail the origin, spread, and impact Bd has had on amphibians, preserved specimens must be analyzed for infection. The mechanism by which specimens are preserved through formalin fixation cross-links integument proteins with the tissue and anchors soluble components. Bd spores in the epidermis are among the components that are locked in by fixation. Through comparison of PCR and histological analytical techniques, it has been shown that histology is more accurate at detecting Bd in anurian integument. These results allow Bd researchers to gauge how accurate PCR sampling is in preserved specimens and poses a tradeoff to the commonly accepted convenience of PCR analysis.

Faculty Sponsor: Alessandro Catenazzi, Gonzaga University

49.2K The Effects of the Direct Instruction Multiplication Flashcard and the Math Racetrack Procedures on Mastery of Multiplication Facts by an At-Risk 6th-Grade Girl

Gabrielle Rivera and Kalli Heric

The purpose of this study was to evaluate the effects of the Direct Instruction multiplication flashcard procedure and the math racetrack procedure on mastery of multiplication facts by a 6th grade girl in a math resource room. A single-subject, multiple-baseline design showed a clear functional relationship between the implementation of the Direct Instruction multiplication flashcards and the mastery of multiplication facts from set 1, set 2, and set 3. The dependent variable was 21 multiplication facts. At the end of the study, the participant had increased her score on a 100-problem, 5-minute, multiplication test from 34 facts correct to 55 facts correct. The procedure was cost effective and required little training to implement.

Faculty Sponsor: Randy Williams, Gonzaga University

49.2L Effects of a Girl's Relationship with her Father in Childhood on her Choice of Intimate Partners in Adult Life

Liliya Rudneva

In an effort to understand intimate partner violence, research has mainly focused on the effects of witnessing and/or experiencing abuse in childhood. Although this is the most accepted explanation for transmission of violence, there has been less attention directed at the effects of a girl's relationship with her father in childhood and the connection to her later choice of intimate partner. In today's literature several trends can be identified concerning the effects of unhealthy paternal relations with daughters: daughters' development of impulsive aggressive personality styles, accepting attitude towards aggression, learned gender/sex roles and inadequate communication patterns.

Faculty Sponsor: Dorothy Munson, Eastern Washington University

49.2M The Effects of Using Contingent Rewards to Teach A First-Grade Student with Autism to Decrease Off-Task Behaviors During Non-Preferred Activities

Katherine Shaw

The purpose of this study was to evaluate the effectiveness of a contingent rewards system that differentially reinforced higher rates of on-task behaviors to decrease inappropriate behavior with a first-grade student diagnosed with autism (ASD). The student's ability to remain on task to a presented task or a preferred choice task appropriately for any length of time was the focus of this study. Through the use of the PECS "First... Then" board and the contingent reward system, the student's verbalization and communication with classroom staff increased as his off-task behaviors decreased. A return to baseline resulted in an increase in off-task. Several benefits of employing a positive procedure in the classroom with a student with autism were discussed.

Faculty Sponsor: T. F. McLaughlin, Gonzaga University

49.2N Reliability and Internal Consistency of ABC Scale

Elena Skornyakov

Poor balance confidence can predict future injurious falls; therefore, it is important to assess balance confidence in older adults. To accurately assess balance confidence, healthcare professionals must have access to an instrument with good reliability and strong internal consistency. This study measured balance confidence of community dwelling adults using the Activities-Specific Balance Confidence Scale (ABC). Forty-four older adults completed the balance confidence measure on two separate testing days, six months apart. Each subject completed the ABC by rating confidence level from 0% (no confidence) to 100% (complete confidence) in performing different tasks. Test-retest reliability and internal consistency were calculated. The results revealed that the ABC has good reliability and strong internal consistency. By adding to the existing knowledge of the instrument's psychometric properties, physical therapists may use the tool more frequently and comfortably, as they are assured that the ABC has good test-retest reliability and strong internal consistency.

Faculty Sponsor: Kimberly Cleary, Eastern Washington University

49.2O Detecting Rapidly Interconverting, Isotopically Edited Enol Tautomers by IR Spectroscopy

Matt Smith

A specific tautomeric form or forms in the bound state can be difficult to directly determine; which tautomer or tautomers are bound? Answering this question assists in computationally-based drug development strategies. However, previously, detecting the location of enolic protons was difficult. The results presented here highlight the implementation of a technique to indirectly detect multiple tautomeric forms, which involves IR spectroscopy of deuterium labeled molecules. Specifically, a di-keto model system was used to illustrate this technique.

Faculty Sponsor: Matt Cremeens, Gonzaga University

49.2P The Determination of Riboflavin in Vitamin Tablets by Fluorescence Spectroscopy

Ryan Stahler

Fluorescence spectroscopy was used in the determination of Riboflavin (Vitamin B-2) mass content in a vitamin tablet supplement. Riboflavin is known to exhibit nearly constant fluorescence from pH 4-8, but is nearly 100% quenched if the pH is raised to 10, or if the molecule is reduced. Consequently, fluorescence measurements of riboflavin are prone to errors resulting from environmental and matrix influences on fluorescence intensity. These matrix effects can be difficult to correct for in quantitative analyses by direct measurement of their influences on fluorescence intensity. Thus, in this study, an analysis of Riboflavin in a vitamin tablet using a method of constant volume standard addition was used to construct a calibration curve with which the concentration of Riboflavin could be calculated. Preliminary results indicate the vitamin contained 66.7 ± 0.13 mg/tablet of Riboflavin yielding a relative error of 33.3% when compared to the labeled value of 100.0 mg/tablet Riboflavin.

Faculty Sponsor: Wes E. Steiner, Eastern Washington University

49.2Q The Effects of Model/Lead/Test and Math Racetrack on Rational Counting by a 5-Year-Old Boy with Developmental Delays

Emalia Steele and Sarah Milburn

The purpose of the present study was to evaluate the effects of Model/Lead/Test and Math Racetrack on rational counting of 5-10 objects by a 5½-year-old boy with developmental delays within a preschool special education classroom setting. Model/Lead/Test is a method used in which the researchers model counting the objects, then the researcher leads the subject in counting the objects, and finally the subject counts the objects on his own. The reading racetrack was developed for teaching sight words, but the authors adapted it to teaching rational counting. The racetrack had different numbers on 28 segments and the child was to count the number of objects on each segment, "racing" around the track. A single subject multiple baseline design showed a clear functional relationship between the Model/Lead/Test combined with Math Racetrack on the child's increased accuracy of rational counting. The procedure was cost effective and required little training to implement.

Faculty Sponsor: Randy Williams, Gonzaga University

49.2R Excited State Reaction Dynamics in High-Energy Cyclopropanone and Epoxide Ring Expansions

Kyle Stumetz and Jason Nadeau

In exploring excited state surface crossings of high-energy ring expansions, derivatives of cyclopropanone and ethene epoxide were mapped using quantum chemical Density Functional Theory. Since the two ring openings involve relatively high-energy species that lead to low energy aromatic species, a common scenario for non-adiabatic reaction paths, we posited that such reaction coordinates might come close to, or cross, excited state surfaces. Both pathways show interesting chemistry near the transition states and are suggestive of nearby conical intersections. Ongoing modeling with CASSCF methods is underway as a means to further explore the unique surface interactions between the excited states of each molecule.

Faculty Sponsor: Matt Cremeens, Gonzaga University

49.2S Celiac Disease and Gluten Sensitivity: Searching for a Therapy through Computer Modeling

Michael Weidemann, Stephen Cooper, Hahn Nguyen and Jessica Pearson

Gluten sensitivity and Celiac Disease is an autoimmune disorder that is caused by incompletely digested gluten proteins. Gluten proteins are found in wheat and other related grains and are found throughout the food industry. Recently researchers have been studying enzymes capable of digesting gluten (e.g. prolyl dipeptidyl aminopeptidase also known as PEPX). If researchers can model the action of these enzymes it may be possible to engineer new PEPX enzymes that are more efficient at digesting gluten under the conditions found in the gut. This research focuses on modeling of the toxic gluten peptides as well as the structures of PEPX from *L. helveticus* and *L. sanfranciscensis* based upon a homologous protein from *L. lactis*. The information gained from this modeling work will be used to bioengineer more efficient PEPX like enzymes.

Faculty Sponsor: Kent Jones, Whitworth University

49.2T Don't Hate, Annotate: Annotation of the Genome of Mycobacteriophage SiSi

Will Wilde, Alyssa Logan, Jack Chase and Mackenzie Bredereck

This research describes the annotation of the genome of mycobacteriophage SiSi, which was isolated at Gonzaga University, Spokane, WA in September 2011. Mycobacteriophages are viruses that infect mycobacteria. Sisi was isolated specifically on *Mycobacteria smegmatis*. After isolation and purification the novel phage SiSi, the genome was sequenced and annotated. We used computer programs to predict open reading frames and assign gene functions. The criteria we used included gaps, or overlap between genes, the ribosome binding site score, BLAST, and coding potential. The computer programs predicted approximately 100 genes in the SiSi genome. Our research group evaluated the predicted genes to determine whether they should be shortened or lengthened and what their potential functions might be. Overall, this enabled us to accurately determine locations of all of the genes in the phage's genome and predict possible gene functions.

Faculty Sponsors: Marianne Poxleitner and Kirk Anders, Gonzaga University

49.2U Diversity in Bacteriophage

Sarah Yeend and Olivia Schuele

It is estimated that there are 10^{31} bacteriophage on the planet. Our research group has isolated a number of new ones. Bacteriophages are viruses that infect bacteria. The phages were collected from soil samples taken from the Gonzaga University's campus and isolated in the laboratory. In order to determine if the phage were novel, we examined the plaque morphology when the phages were plated on *Mycobacterium smegmatis*. We also performed restriction digests of the phages DNA and visualized it using gel electrophoresis. The physical structure of the phages were examined using Transmission Electron Microscopy (TEM). It was determined that multiple novel phages were indeed isolated. This further supports the hypothesis that there is a huge amount of diversity in the phage world.

Faculty Sponsors: Marianne Poxleitner and Kirk Anders, Gonzaga University

2012 SPOKANE INTERCOLLEGIATE RESEARCH CONFERENCE
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Kang, Tom – 49.1T *Whitworth University*
Kanter, Bryce – 36A *Gonzaga University*
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Larsen, Ian – 30B *Gonzaga University*
Le, Cuong – 26B *Whitworth University*
Ledesma, Victoria – 27B *Gonzaga University*
Lee, Dave – 49.2D *Gonzaga University*
Lee, Tae-Hun – 24Y *Whitworth University*
Lilley, Devon – 49.2F *Gonzaga University*
Lochner, Jenna - 49.1G *Gonzaga University*
Loe, Kienen – 24B *North Central High School IST*
Logan, Alyssa – 49.2T *Gonzaga University*
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Luebbering, Jessica – 41A *Gonzaga University*
Lund, Katlin – 49.2E *Gonzaga University*
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Martin, Ashley – 41B *Gonzaga University*
Matthis, Ryan – 7B *Gonzaga University*
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Solis, Angeles – 41C *Whitworth University*
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Willmore, Joshua – 35D *Whitworth University*
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Wilson, Jennifer – 24OO *Gonzaga University*
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