



**The**  
**Provost's Honors**  
**Symposium**  
**May 1, 2013**

For research, scholarship,  
and creative activity



**CERCA** Celebration of  
Excellence in Research  
and Creative Activity

## **WELCOME**

### **WELCOME TO THE THIRD ANNUAL PROVOST'S HONORS SYMPOSIUM FOR RESEARCH, SCHOLARSHIP, AND CREATIVE ACTIVITY.**

Thanks to the generous support of **Provost Patricia Kleine**, the University Honors Program and the Office of Research and Sponsored Programs were able to create this annual event: an opportunity for selected students to present their top-notch work in a professional conference format.

This year the Provost's Honors Symposium will showcase 80 students presenting 42 research, scholarly, and creative projects in 26 disciplines from all four UW–Eau Claire colleges.

Participants in the Provost's Honors Symposium are nominated each spring by their UW–Eau Claire faculty mentors or major departments. Finalists are selected by the University Honors Council, a committee that includes two University Honors students, faculty representatives from each of the UW–Eau Claire colleges, and University Honors staff:

- **Ivy Bohnlein, Assistant Director, University Honors Program**
- **Phil Ihinger, College of Arts and Sciences**
- **David Jones, Honors Faculty Fellow**
- **Katy Kelly, Sophomore, and Honors LLC representative**
- **Mariah Quick, Senior, and President, Honors Program Organization**
- **Vicki Samelson, College of Education and Human Sciences**
- **Rita Sperstad, College of Nursing and Health Sciences**
- **Angie Stombaugh, College of Nursing and Health Sciences**
- **Cody Thompson, Junior, and Academic Affairs Secretary, Honors Program Organization**
- **Ingrid Ulstad, College of Business**
- **Jeff Vahlbusch, Director, Ph.D., Associate Professor of German**

In founding and in organizing the annual Provost's Honors Symposium for Research, Scholarship, and Creative Activity, the University Honors Program is pursuing one of its four main program goals: "To promote and support intellectual and scholarly achievement, great teaching, and student-faculty collaboration across the university."

***Jefford Vahlbusch***

**Director, University Honors Program**

**PROVOST'S RECEPTION**

ALL PRESENTERS, ATTENDEES, FACULTY, STAFF,  
STUDENTS, AND COMMUNITY MEMBERS ARE  
WELCOME!



*Join Provost Kleine  
for her reception following the presentations  
at 5:15 p.m.*

*Dakota Ballroom.*

*Hors d'oeuvres and refreshments will be served.*

*Short Program at 5:45 p.m.*

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## SCHEDULE AT A GLANCE

### SECTION I: 1:00 – 2:00 P.M.

#### HO-CHUNK

1. Hmongwrite
2. UWEC Hybrid Bus Project
3. The Wire

#### MENOMINEE

4. Vengeance or Justice: How Poseidon and Zeus Respond to Odysseus' Violation of *Xenia* in the *Odyssey*
5. Sibling Relationships in Revenge Tragedies
6. The Changing Morality of a *Black Boy*

#### CENTENNIAL

7. China Dual Degree Program in Accounting: Bridging a Cultural Gap
8. The Impact of Mandating the Adoption of International Financial Reporting Standards on the Accounting Profession and Higher Education: A Case Study
9. Nutritional Agency Constraints Among Food-Insecure Residents of Eau Claire County

#### CHANCELLORS

10. Effects of Psychotropic Medication on "Hunger" and Learning and Memory
11. Factors Predicting Intent to Intervene with a Potentially Suicidal Peer
12. Building Blocks of Science Psychology: Students Understanding of Probabilistic Trends and Correlation-Versus-Causation

### SECTION II: 2:10 – 3:10 P.M.

#### HO-CHUNK

13. Domestic Intercultural Immersion: Somalis in the Twin Cities
14. Burnout and Resilience Among Human Services Professionals in South Africa
15. Reentry Experience of Study Abroad Students: A Second Cross-Cultural Immersion

#### MENOMINEE

16. Obesity and Type II Diabetes Mellitus in Chinese Middle-School Students
17. Metals in Hair as Predictors of Disease – An International Collaboration
18. Measurement of Airborne Particulates around Sand Mines and Processing Plants

#### CENTENNIAL

19. Results from a Survey of Middle and High School Students Regarding Climate Change Awareness and Understanding
20. Comparing Children's Self-Reported Fruit and Vegetable Behavioral Intent to Observed Fruit and Vegetable Consumption for Snack and Dinner in an Afterschool Program
21. Observing Fruit and Vegetable Consumption of Children for Snack and Dinner in an Afterschool Program: Exploring the Influence of Healthy Messages, Incentives, and Praise

**CHANCELLORS**

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22. Identifying Genes Involved in Light Signaling Using Genetic Suppressor and Enhancer Screens in the Flowering Plant *Arabidopsis thaliana*
23. Condensed-Phase Effects on the Structural Properties of  $FCH_2CN-BF_3$  and  $ClCH_2CN-BF_3$
24. The chemistry of Chromium (VI) and methanobactin

**SECTION III: 3:20 – 4:20 P.M.**

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**HO-CHUNK**

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25. Investigating the preference for simultaneous prompting and constant prompt delay procedures in teaching skills to children with autism
26. Self-assessment: Influence of study skills training and interactive review sessions on learning
27. Social Networking in Aphasia

**MENOMINEE**

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28. Exploring 'ping-pong' catalytic mechanism in quinone reductase
29. Covalently Crosslinked Soft Networks of Gold Nanoparticles
30. Chemical Fingerprint of Quartz Crystals Sampled Along a Metamorphic Gradient Across the Swiss Alps

**CENTENNIAL**

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31. More Than Monica: Understanding Augustine Through the Lens of Psychobiography
32. An Examination of the Conditions and Implications of Supererogatory Forgiveness
33. Late 19<sup>th</sup> Century Harmonic Practice as a Bridge to the 20<sup>th</sup> Century

**CHANCELLORS**

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34. High School to College Transition Experiences
35. A Peace of My Mind Eau Claire
36. One Million Bones

**SECTION IV: 4:30 – 5:15 P.M.**

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**HO-CHUNK**

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37. Distribution of Genome Rearrangement Distance under Double Cut and Join
38. Construction of a Human Cytomegalovirus (HCMV) Devoid of the US29 Gene

**MENOMINEE**

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39. Development of Oral Proficiency
40. "She was like, 'Do you have to say it like that?'" – Use of and Attitudes toward Quotative Verbs in the Upper Midwest

**CENTENNIAL**

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41. The Value of an Education: A Longitudinal Study of Science Literacy
42. Outcomes on Engagement & Critical Thinking Using Problem-Based Learning to Teach Introductory Psychology

## PRESENTATIONS

SECTION I: 1:00 – 2:00 P.M.

### HO-CHUNK

#### 1. Hmongwrite

Presenter: Ong Xiong

Faculty nominator: Theresa D. Kemp

"Hmongwrite" is a pastiche—or as Ong describes it, a "creative redefinition"—of May Lee's "HmongSpeak" (in Mai Neng Moua's 2002 anthology, *Bamboo Among the Oaks*). "Hmongwrite" imitates the language and style of Lee's original piece, but also critically engages it, directly in the creative text itself but also in Ong's introductory essay, which brilliantly articulates her concerns and the journey of her thinking while writing "Hmongwrite."

#### 2. UWEC Hybrid Bus Project

Presenters: Luke Benson, Jennifer Johns, Alison Wheeler

Faculty nominators: Ned Gannon, Sooyun Im, Jyl Kelley

Beginning with a conversation between associate professor Jyl Kelley and Mike Branco, City of Eau Claire Transit, The Department of Art & Design (three faculty: Jyl Kelley, Sooyun Im, and Ned Gannon; and three students: Luke Benson, Jenny Johns, and Alison Wheeler), The Watershed Institute, and ORSP came together to create art work to be wrapped around three new hybrid vehicles in Eau Claire, drawing attention to the Chippewa Valley Watershed in which we dwell.

#### 3. The Wire

Presenter: Adelyn Strei

Faculty nominator: Theresa D. Kemp

"The Wire" is an original song and video composed in response to a brutally violent moment in Lynda Barry's deceptively simple—and sometimes wickedly funny—illustrated novel, *Cruddy*. Addie's song brilliantly captures in music the strong emotional attachment between the novel's main character and her abusive father, a murderous alcoholic and unemployed meat-cutter. The song beautifully highlights what makes the novel's main character so compelling: her refusal to cut the wire of love and hope even though it makes her dangerously vulnerable. Here is a link to the video on YouTube:

<http://www.youtube.com/watch?v=G5a7UOR75E> .

### MENOMINEE

#### 4. Vengeance or Justice: How Poseidon and Zeus Respond to Odysseus' Violation of *Xenia* in the *Odyssey*

Presenter: Jason Hansen

Faculty nominator: Matt Waters

Odysseus' violation of *xenia* places the Greeks' new worldview of the divine in competition with the old worldview. After Odysseus robs, blinds, and insults the cyclops Polyphemus, two gods are called: Poseidon and Zeus. Both gods exact punishment on the hero for his violations. Poseidon acts in the old ways of vengeance, but Zeus acts for justice and quashes Poseidon's anger once Odysseus has suffered adequately.

### **5. Sibling Relationships in Revenge Tragedies**

Presenter: Charlotte Kupsh

Faculty nominator: Jan Stirm

The project focuses on investigating trends in familial relationships in 15<sup>th</sup>-17<sup>th</sup> century revenge tragedies, an area in which little significant research has been conducted. With a base in Shakespeare's *Hamlet*, six plays were analyzed in-depth in order to find patterns in familial relationships. The research pointed to a distinct plot pattern in the way the brother-sister relationship developed over the course of the play, with specific emphasis on the sister's romantic interactions. In this type of revenge tragedy, there exists an extreme relationship between the brother and his sister's suitor – for differing reasons, in each play the brother either murders the suitor or gives his life to protect the relationship between the sister and her suitor.

### **6. The Changing Morality of a *Black Boy***

Presenter: Mitch Lassa

Faculty nominator: Chuck Hanson

In this study of Richard Wright's *Black Boy*, Mitch Lassa uses Lawrence Kohlberg's theory of moral development to identify and discuss stages of moral growth in the character of Richard, the protagonist of Wright's acclaimed narrative. Although *Black Boy* was based on Wright's own experience of growing up in the racist culture of Mississippi in the early years of the twentieth century, the book was constructed as a work of literary art with a strong polemical purpose. In his study, Mr. Lassa uses a psychological theory to explore and interpret a literary text.

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## **CENTENNIAL**

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### **7. China Dual Degree Program in Accounting: Bridging a Cultural Gap**

Presenters: Amy Bainbridge, Malory Peterson, Kun Wang

Faculty nominators: D'Arcy Becker; Ingrid Ulstad

An informal peer mentoring program was created in the fall of 2012 in the Accounting and Finance Department. Its purpose is to help incoming Chinese majors in the China Dual Degree program meet American students in the department and help ease the transition into our university setting. Chinese student mentees were matched to American mentors. Surveys were conducted, and results of the surveys will be shared.

### **8. The Impact of Mandating the Adoption of International Financial Reporting Standards on the Accounting Profession and Higher Education: A Case Study**

Presenters: Matthew Chybowski, Joshua Mondor, Tyrrell Wirkus

Faculty nominator: William F. Miller

This study was based on 35 interviews conducted in 30 days in England, Scotland, and Ireland with accounting professionals in public and private practice, members of accounting regulatory bodies and accounting academics from nine different universities regarding their experiences in the 2005 transition to International Financial Reporting Standards (IFRS) from UK and Irish GAAP. The purpose of the study was to develop best practices for the U.S. to follow upon transition.



**9. Nutritional Agency Constraints Among Food-Insecure Residents of Eau Claire County**

Presenter: Laurelyn Wieseman

Faculty nominator: Ruth Cronje

This project investigated the constraints that bear upon the ability of low-income residents of Eau Claire county to procure and prepare a healthful diet. Wieseman used a survey administered to guests eating at Community Table to gather data about the money, time, and resource deficits that influence their ability to afford food.

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**CHANCELLORS**

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**10. Effects of Psychotropic Medication on "Hunger" and Learning and Memory**

Presenter: Amy Johnson

Faculty nominator: David Jewett

Our laboratory has developed animal models of "hunger", motivation, and learning and memory. Clinically-useful medications often have the potential to treat multiple conditions. We have examined the ability of medications used to treat depression, drug overdose, or attention-deficit hyperactivity disorder to reduce "hunger" and affect motivation or learning and memory.

**11. Factors Predicting Intent to Intervene with a Potentially Suicidal Peer**

Presenters: Elizabeth Farley, Michael Kosiak

Faculty nominator: Jennifer J. Muehlenkamp

Using the theory of planned behavior and attributional theory, the current study examines factors associated with an individuals' likelihood of intervening with a peer/friend who is at risk for suicide. An experimental design in which participants were exposed to a vignette depicting a friend at either high or low risk for suicide resulting from a series of events either within or outside of one's control was used. After reading the vignette, participants responded to a series of questions asking about their intent to intervene (refer to mental health counseling, ask if the peer is suicidal) as well as items reflecting key aspects of the theories used. Analyses will determine which elements of the theory of planned behavior and how these elements interact with different attributions to predict intervening.

**12. Building Blocks of Science Psychology: Students' Understanding of Probabilistic Trends and Correlation-Versus-Causation**

Presenters: Luke Heidtke, Kate Morrison

Faculty nominator: April Bleske-Rechek

We are interested in how students apply their knowledge of correlation versus causation when they hear research summarized in the media, when they interpret data in research articles, and when they analyze and interpret data as part of their own independent research projects. In our study, students read several experiment and non-experimental research scenarios. For each scenario, they were given several possible interpretations of the data. Students consistently inferred causality from non-experimental (correlational) research scenarios.

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**HO-CHUNK**

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**13. Domestic Intercultural Immersion: Somalis in the Twin Cities**

Presenters: Samantha Kobs, Monet Barnes, Logan Roshell

Faculty nominator: Aram deKoven

The Somali intercultural immersion experience combines more than twenty four hours of classroom-based instruction, a week-long, full-day, field placement in specially selected schools that serve primarily Somali youth, and daily excursions in and around the Somali community in Minneapolis/St. Paul, MN. Through this program, participants will bring together an intersection of race, culture, history, contemporary immigrant experiences, socio-economic status, second language learning/study and teaching.

**14. Burnout and Resilience Among Human Services Professionals in South Africa**

Presenters: Carolyn Egan, Sara Fathauer, Randi Winchester

Faculty nominator: Leah Olson-McBride

The purpose of this International Fellows Research was to develop an understanding of the individual and organizational factors that impact the development of burn-out and resilience among professional care providers for South African children and families impacted by HIV/AIDS. The research team traveled to South Africa and collected data from over 150 respondents via interviews, the Maslach Burnout Inventory, and the Positive and Negative Affective State Inventory. Initial results indicate that the level of burnout among CYCW in South Africa is remarkably low. Three specific factors emerged as primary contributors to resiliency: spiritual beliefs, co-worker support, and access to job-specific training.

**15. Reentry Experience of Study Abroad Students: A Second Cross-Cultural Immersion**

Presenter: Britta Marie Cusick

Faculty nominator: Judy Rene Sims

This study explored incidents of reentry culture shock encountered by study abroad students, change in identity as a result of study abroad, and adaptation skills developed by the sojourners. Survey data were gathered by means of an online questionnaire administered to a random sample of all UW-Eau Claire students (N=374) who had studied abroad during a specified time period. Textual analysis was used to code and content analyze the qualitative responses. A majority (86%) of the sojourners reported they had not prepared for reentry shock. A majority (75%) also agreed they had experienced a change in identity. The results show the participants developed a variety of adaptation or adjustment skills during the reentry process. The findings suggest the importance of providing reentry training programs.

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**MENOMINEE**

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**16. Obesity and Type II Diabetes Mellitus in Chinese Middle-School Students**

Presenters: Anja Meerwald, Laurelyn Wieseman

Faculty nominators: Catherine Berry, Lee-Ellen Kirkhorn, Bonnie Solem

Working collaboratively with Chinese nurses and two UWEC nursing faculty, three undergraduate students visited China. Students from two economically and socially diverse middle schools in China were enrolled in a three week nutrition and exercise program that included structured information about balanced diet and

regular physical activity. Chinese students were surveyed using an instrument focused upon nutrition and exercise practices, electronic screen time, and BMI before and after the intervention. Investigators included the UWEC group and Chinese nurses from the First Affiliated Hospital

### **17. Metals in Hair as Predictors of Disease – An International Collaboration**

Presenters: Johnathan Boettcher, Jonathan Jilek, Rachael Korinek, Allison Malecek, Jared Ryan, Kristen Walters

Faculty nominators: Jill Ferguson, Crispin Pierce

Biomarkers of exposure to toxic substances, such as lead in blood, can be useful predictors of subsequent disease. We measured concentrations of heavy metals in 67 hair samples collected in 1985-86 in Finland. Using extensive follow-up evaluations at the University of Eastern Finland-Kuopio, we found that cadmium in hair was associated with smoking, arsenic was associated with colitis, and lead was associated with pneumonia.

### **18. Measurement of Airborne Particulates around Sand Mines and Processing Plants**

Presenters: Jeron Jacobson, Zachary Kroening, Kimberly Shermo

Faculty nominator: Crispin Pierce

Sand mining and processing in western Wisconsin has proliferated with more than 100 operating or planned facilities. These operations generate airborne particulates (PM<sub>2.5</sub>) that are associated with health risks. We measured increases in PM<sub>2.5</sub> from construction to full operation at a Chippewa Falls plant, and higher PM<sub>2.5</sub> levels compared to DNR regional concentrations at 3 plants.

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## **CENTENNIAL**

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### **19. Results from a Survey of Middle and High School Students Regarding Climate Change Awareness and Understanding**

Presenters: Mahmoud Ahmed, Elora Leene, Emy Marier, Wesley Meives, Daniel Putman

Faculty nominator: Eric Jamelske

We conduct surveys of middle and high school students in Wisconsin to broaden our understanding of climate change public opinion. We find middle school students are much less informed and concerned about climate change compared to high school students. Ninth grade students report the highest level of awareness and concern. Students in all grades say they learn more about climate change in school than from other sources with older students saying they learn the most in school. Our analysis will further examine differences based on gender, class the survey was given in, and more.

### **20. Comparing Children's Self-Reported Fruit and Vegetable Behavioral Intent to Observed Fruit and Vegetable Consumption for Snack and Dinner in an Afterschool Program**

Presenters: Tiffany Christner, Lydia Harrer

Faculty nominator: Eric Jamelske

We observe the fruit and vegetable consumption of children (ages 7 – 15) attending an afterschool program. In addition, we survey these children's willingness to eat familiar and unfamiliar fruit and vegetables and ask them to identify fruit and vegetable items they like, don't like, and have not tried. Our data analysis examines the degree to which children's observed consumption behavior matches their self-reported behavioral intent. We have completed questionnaires for about 100 students and we are collecting fruit and vegetable intake

data four days a week from September 17, 2012 – April 12, 2013. A preliminary analysis suggests there is some deviation between children's observed behavior and their self-reported behavioral intent.

**21. Observing Fruit and Vegetable Consumption of Children for Snack and Dinner in an Afterschool Program: Exploring the Influence of Healthy Messages, Incentives, and Praise**

Presenters: Mitchell Fischer, Stephan Fisher, Laurelyn Wieseman

Faculty nominator: Eric Jamelske

In this study we observe the fruit and vegetable consumption of children (ages 7 – 15) attending an afterschool program. We first establish a baseline fruit and vegetable intake and then experiment using a variety of incentives including healthy messages/fun facts, raffle prizes and praise designed to increase intake above baseline levels. We are collecting fruit and vegetable intake data four days a week from September 17, 2012 – April 12, 2013. A preliminary analysis suggests children do generally eat some fruit and vegetables, but there is significant room for increased consumption in response to incentives and praise.

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**CHANCELLORS**

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**22. Identifying Genes Involved in Light Signaling Using Genetic Suppressor and Enhancer Screens in the Flowering Plant *Arabidopsis thaliana***

Presenter: Gavin Sunde

Faculty nominator: Derek Gingerich

The Gingerich lab has identified two genes, LRB1 (Light-Response BTB1) and LRB2, which act as negative regulators of the red light signaling pathway in the model plant *Arabidopsis thaliana*. To identify additional components in light signaling, we conducted genetic screens to identify mutations which reduced or enhance the shade tolerance phenotype of *lrb1/lrb2* mutant plants. These screens identified more than 400 lines of plants with suppression or enhancer phenotypes; these lines likely contain mutations in genes which have roles in light responses.

**23. Condensed-Phase Effects on the Structural Properties of FCH<sub>2</sub>CN-BF<sub>3</sub> and ClCH<sub>2</sub>CN-BF<sub>3</sub>**

Presenter: Amanda Buchberger

Faculty nominator: Jim Phillips

We have assessed the degree to which bulk, condensed-phase environments affect the structural properties of FCH<sub>2</sub>CN–BF<sub>3</sub> and ClCH<sub>2</sub>CN–BF<sub>3</sub> using both low-temperature infrared spectroscopy and computations. We have obtained the spectra of both complexes in solid nitrogen and neon, and have assigned the B-F asymmetric stretching and BF<sub>3</sub> “umbrella” modes, and they are shifted from those of the gas-phase structure. Experiments in solid argon are in progress. In addition, we have mapped the B-N bond potential using both DFT and post-HF methods and modeled the effects of the bulk, condensed phase media using the PCM model. The potentials are flat such that the inner, bonded region lies only 3-5 kcal/mol above the global minimum (~2.4 Å). However, preferential solvation of the inner region causes the minimum to shift inwards with increasing dielectric constant. Both experiment and theory indicate that inert matrix environment significantly affects the structures of these complexes.

#### **24. The Chemistry of Chromium (VI) and Methanobactin**

Presenter: Cody Thompson

Faculty nominator: Marc McEllistrem

We examined chromium's reactivity (specifically, Cr(VI)) with methanobactin (mb) OB3b, using X-ray photoelectron spectroscopy (XPS) and visible light spectroscopy. The usual role for methanobactin, a unique biomolecule produced by methane-loving bacteria, is to bind Cu(II) ions external to the bacterium, reduce the copper from Cu(II) to Cu(I), and chaperone the copper ion into the cell. Cr(VI), a known toxin and carcinogen requires safe handling practices; mb might have been a good compound for its disposal. Our studies of Cr(VI) and mb using XPS show that almost five Cr (VI) ions can be reduced per mb. However, our results from visible light spectroscopy indicate that the reduction is due to a non-specific interaction of Cr(VI) with mb and that the reaction occurs as a result of the drying process (we must dry the Cr/mb solution samples for XPS analysis), rather than the specific binding of Cr(VI) by mb followed by the reduction of chromium, as occurs in the case for copper.

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**SECTION III: 3:20 – 4:20 P.M.**

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#### **HO-CHUNK**

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#### **25. Investigating the Preference for Simultaneous Prompting and Constant Prompt Delay Procedures in Teaching Skills to Children with Autism**

Presenters: Ashley Niebauer

Faculty nominator: Kevin Klatt

This study focuses on determining if children diagnosed with autism demonstrate a consistent preference between two prompting procedures (simultaneous prompting or constant prompt delay) and whether either procedure results in higher skills acquisition for participants. Many young children with autism lack the ability to communicate to therapists; therefore it is difficult for therapists to evaluate the types of teaching techniques the children may prefer.

#### **26. Self-assessment: Influence of Study Skills Training and Interactive Review Sessions on Learning**

Presenters: Rachael Cowan, Kelsey Dumanch

Faculty nominator: Jerry Hoepner

The present study is investigating the accuracy of student self-assessments for learning outcomes. Secondly, it will consider the effect of study skills training and interactive reviews on learning and self-assessment skills. This study is a modification of a previous investigation of self-assessment among individuals with traumatic brain injuries. It is being conducted across the course of a two-semester course sequence, CSD 256 (Anatomy & Physiology of the Speech & Hearing Mechanism) and CSD 353 (Speech & Hearing Science).

#### **27. Social Networking in Aphasia**

Presenters: Heather Buhr, Hannah Miller

Faculty nominator: Jerry Hoepner

Buhr and Miller's research examines the development, implementation, and testing of a social media application for individuals with aphasia. While access to interactions with friends and family is becoming increasingly accessible given social media applications such as Facebook and Twitter, access to individuals with aphasia remains restricted due to the complexity of such sites. Buhr and Miller worked together with

faculty collaborators Dr. Jerry Hoepner (CSD) and Dr. Chris Johnson (CS) to develop an aphasia-friendly social media application.

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## **MENOMINEE**

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### **28. Exploring 'ping-pong' catalytic mechanism in quinone reductase**

Presenter: Yer Yang

Faculty nominator: Sudeep Bhattacharyay

Quinone reductases are important players in detoxification, cellular protection and anti-cancer treatment. We are using theoretical chemistry to model the catalysis of the enzyme - quinone reductase II. The model is expected to provide a molecular-level insight of the so-called 'ping-pong' substrate shuttling process in the enzyme active site pocket.

### **29. Covalently Crosslinked Soft Networks of Gold Nanoparticles**

Presenters: Tayo Sanders II, Mariah Saucedo

Faculty nominator: Jennifer Dahl

Alkanethiol-capped gold nanoparticles were synthesized and purified prior to being assembled as a monolayer confined to the air-water interface within a Langmuir trough. After measuring film characteristics, the impact of the addition of a cross-linking ligand was addressed, and it was found that crosslinking greatly improved the strength and integrity of the nanoparticle film. Next steps will include the incorporation of this new material in thin-film photovoltaic devices.

### **30. Chemical Fingerprint of Quartz Crystals Sampled Along a Metamorphic Gradient Across the Swiss Alps**

Presenters: Aleisha Johnson, Todd Lindblad, Scott Wipperfurth

Faculty nominator: Phillip Ihinger

Quartz crystals have been investigated to elucidate the evolution of hydrothermal fluid systems that accompanied the uplift of the Swiss Alps. Crystals from twenty localities were collected along a geologic traverse across four distinct temperature regimes that define the Alpine Mountain Range. Spectroscopic measurements reveal the changing fluid compositions, crystal growth timescales, and post-crystallization thermal histories characteristic of each regime.

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## **CENTENNIAL**

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### **31. More Than Monica: Understanding Augustine Through the Lens of Psychobiography**

Presenter: Alissa Wulf

Faculty nominator: Charlene Burns

Augustine of Hippo's life and work (354 CE – 430 CE) have been subjected to much scrutiny from scholars hoping to understand the ways in which his personal life history influenced his theological and philosophical works. Many interpretations have been offered, with the majority appealing to Freudian themes focused on Oedipal issues in Augustine's relationship with his mother, Monica, as recorded in his Confessions (397 CE); unfortunately, these works have ignored the social and cultural realities of family relations in the ancient world. Although Monica is certainly a central figure in Augustine's life, the narrowly Freudian focus has given us a one-dimensional picture of this complex and brilliant man. Making use of new insights into Roman family relations and attitudes toward sexuality, this project is a preliminary attempt to employ Attachment Theory in attempting to develop a more complete psychobiography of this important historical figure.

### **32. An Examination of the Conditions and Implications of Supererogatory Forgiveness**

Presenter: Ivanna Boychuk

Faculty nominator: Sean McAleer

Many philosophers view forgiveness as not a duty but as a supererogatory action, one that is praiseworthy yet not obligatory, but often they do not explain what makes forgiveness supererogatory. The aim of this project is to explore the grounds on which forgiveness is supererogatory. I argue that self-forgiveness does not fit well into the supererogation framework since it does not entail altruistic motives and is not analogous to a gift as are many other acts of supererogation. I conclude that even when forgiving is supererogatory, it is unique among the supererogatory acts.

### **33. Late 19<sup>th</sup> Century Harmonic Practice as a Bridge to the 20<sup>th</sup> Century**

Presenter: Yeng Chang

Faculty nominator: Gary Don

This project involves the analysis of passages in the music of Prokofiev and Vaughan Williams, using Russian modal theory and Ian Bates' newly developed Table of Diatonic Relations. The result is the identification of musical scales that function as the basis for those musical passages, and whose relationships can be described using mathematical operations.

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## **CHANCELLORS**

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### **34. High School to College Transition Experiences**

Presenters: Andrew Dettle, Carl Eithun, Anna Hanson, Arrly Her, Erik Hulman, Julia Kasprzak, Justina Kinard, Amanda Nachtwey, Nicole Neal, Zachary Nemeth, Trent Tetzlaff, Hannah Tousignant, Jessica Valdespino, Samantha Weinkauf

Faculty nominator: Leah Olson-McBride

A research team composed of students from the UWEC Collegiate Bridge program explored the high school to college transition experiences of first-year students at UWEC. The sample consisted of approximately 40 respondents, all of whom were first-year students at UWEC. Respondents were administered a 27-question survey focused on academic, social, familial, and financial factors that have impacted their high school - to - college transition experience. The findings will be analyzed to determine commonalities among respondents in terms of factors that may have impacted their transition from high school to UWEC.

### **35. A Peace of My Mind Eau Claire**

Presenters: Drew Hagen, Phillip Schladweiler, Aly Wheeler

Faculty nominators: Rick Mickelson, Don Mowry

A Peace of My Mind Eau Claire is a campus project based on exploring the meaning of peace, one story at a time. The overall project includes an exhibit, a guest residency, student engagement activities, and a May 7th Forum featuring Ela Gandhi. The students here are participating in two prominent student engagement activities of the project: creating a local version of A Peace of My Mind for the exhibit and One Million Bones.

### **36. One Million Bones**

Presenters: Allison Bradway, Merissa Kane, Katherine Reuter, Whitney Ryan, Ashley Schleppenback,

Faculty nominators: Rick Mickelson, Don Mowry

The One Million Bones project reminds us that we are all similar inside, that life is precious, and that genocide should never happen. It will educate people so that they know what is going on in countries that lose this human value and right, such as Somalia, the Democratic Republic of the Congo, and Syria. Carl Wilkens, the only American to remain in Rwanda during the 1994 Genocide, has stated, "When we make something with our hands, it changes the way we feel, which changes the way we think, which changes the way we act. A group of 5 students from two social work classes organized a series of events leading up to a national art and education installation/event on the National Mall in June. The activities included two days of bone making and one public installation at UW-Eau Claire. Outreach to an area high school and an area nonprofit agency yielded additional bone-making and educational events on the topic of genocide prevention.

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**SECTION IV: 4:30 – 5:15 P.M.**

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**HO-CHUNK**

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**37. Distribution of Genome Rearrangement Distance under Double Cut and Join**

Presenter: Noah Williams

Faculty nominator: Manda Riehl

Using the Double Cut and Join (DCJ) model for genome rearrangement we use combinatorial techniques to analyze the distribution of genomes under DCJ distance. We present formulas and an exponential generating function for the number of genomes at a given distance from an arbitrary starting genome.

**38. Construction of a Human Cytomegalovirus (HCMV) Devoid of the US29 Gene**

Presenter: Madeleine Hacker

Faculty nominator: Lloyd Turtinen

The purpose of the project was to construct intact HCMV particles containing a mutation in the US29 gene. This was done using bacterial artificial chromosome (BAC) engineering. An antibiotic cassette was inserted into the DNA sequence of the US29 gene using homologous recombination. Bacteria were selected for ability to resist Kanamycin and ferment galactose. BAC DNA containing the insertional mutation was electroporated into fibroblasts where HCMV particles were formed and released from the cells. Mutant virus shows decreased growth when compared to the wild-type virus.

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**MENOMINEE**

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**39. Development of Oral Proficiency**

Presenter: Jenny Barth

Faculty nominator: Martina Lindseth

The objective of this project is to better understand how students acquire language proficiency in a non-immersion environment, i.e. in a classroom setting at UWEC. This research helps to gauge improvements in students' oral proficiency and indicates to what extent this development can be influenced and facilitated by specific activities in class.

**40. "She was like, 'Do you have to say it like that?'" – Use of and Attitudes toward Quotative Verbs in the Upper Midwest**

Presenter: Jacklyn Ryan

Faculty nominator: Erica Benson



Much of the research on quotative verbs has focused on users in the western and eastern United States (Buchstaller, et al. 2007; Barbieri 2005; Blyth, Recktenwald and Wang 1990). The use of innovative quotative verbs (e.g., be like, be all, etc.) in the Upper Midwest was investigated, exploring demographic factors associated with their use as well as pragmatic differences in the use of a variety of quotative verbs. Thirty-four participants (17 male and 17 female, ranging in age from 15 to 56) engaged in a recorded conversation with friends (with prompts to elicit quotative verbs if necessary) and later completed an online survey designed to determine participant's awareness of and attitudes toward quotative verbs (used in the conversations) and explore pragmatic differences among quotative verbs generally. By focusing on the awareness of personal use, attitudes toward quotative verbs, and differences in perceived meaning, in addition to a traditional sociolinguistic analysis, this study looks at quotative verbs from a perspective that has not been taken in previous studies and allows for a more comprehensive understanding of quotative use in the United States.

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## **CENTENNIAL**

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### **41. The Value of an Education: A Longitudinal Study of Science Literacy**

Presenters: Bryan Donovan, Eric Hanley, Jenna Kelley, Danielle Ryan

Faculty nominator: April Bleske-Rechek

Cross-sectional studies have linked science literacy to exposure to college-level science coursework. We followed 200 undergraduates over three years to determine whether they show growth in science literacy. Students showed limited progress in scientific reasoning and probabilistic reasoning. Gender, discipline of study, and incoming aptitude moderated change in science literacy.

### **42. Outcomes on Engagement & Critical Thinking Using Problem-Based Learning to Teach Introductory Psychology**

Presenters: Marissa Hansen, Nicole Weiss

Faculty nominator: Jennifer Muehlenkamp

This project involved creating new curriculum, using problem-based pedagogical strategies, for the teaching of Introduction to Psychology. The course structure and content was fully revised based on the problem-based learning literature and direct input from the undergraduate researchers. The impact of the curricular changes on student engagement, perception of critical thinking skills, and ability to critique psychological research methods was assessed using a pre-post survey design to assess changes among the students exposed to the new curriculum. Post-survey responses were also compared to matched control participants drawn from other non-PBL sections of introductory psychology courses.

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