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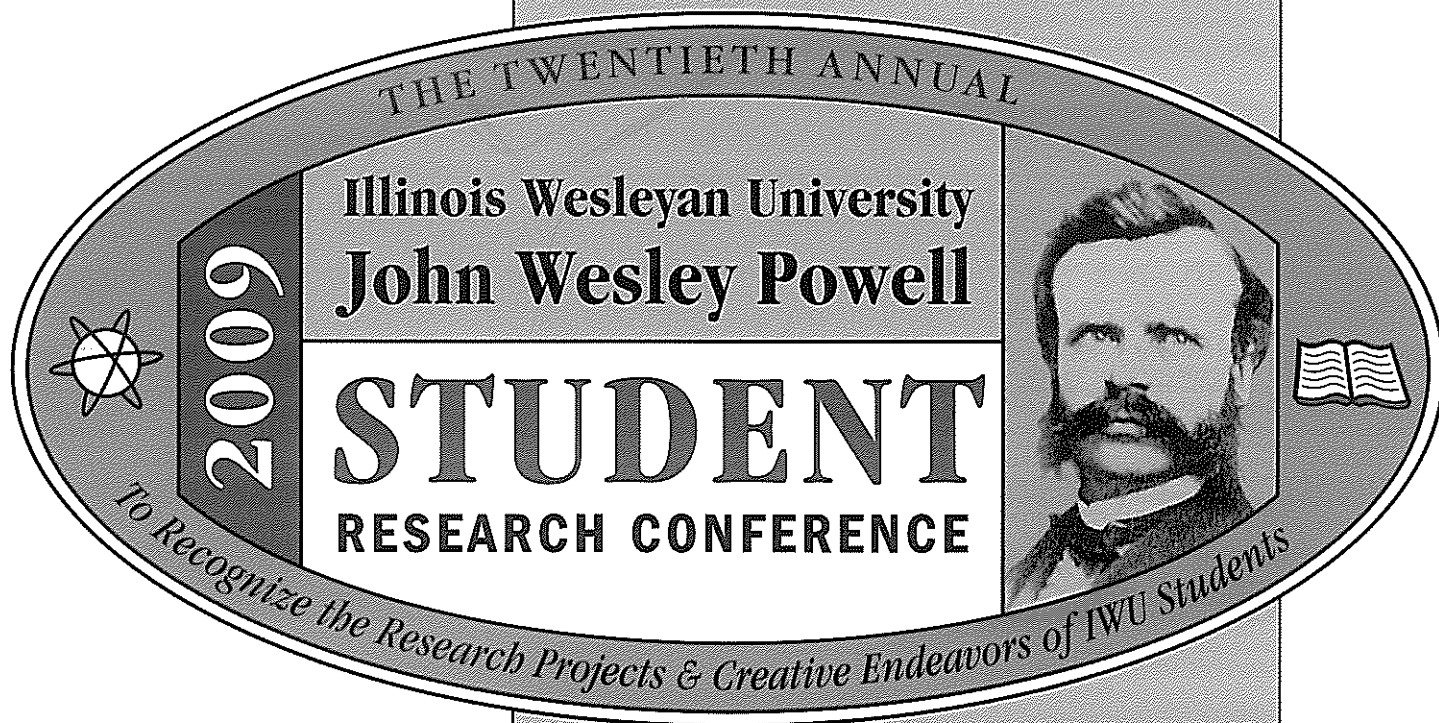
Complete 2009 Program

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CENTER FOR
NATURAL SCIENCES
SATURDAY
APRIL 18, 2009

<http://www.iwu.edu/jwprc>

The conference is named for explorer and geologist John Wesley Powell, a one-armed Civil War veteran and a founder of the National Geographic Society who joined Illinois Wesleyan University's faculty in 1865. He was the first U.S. professor to use field work to teach science. In 1867 Powell took Illinois Wesleyan students to Colorado's mountains, the first expedition of its kind in the history of American higher education. Later, Powell was the first director of the Smithsonian Institution's Bureau of Ethnology.

Twentieth Annual

John Wesley Powell • IWU

Student Research Conference

Science Commons

Center for Natural Sciences

Saturday, April 18, 2009

8:30 a.m. – 4:00 p.m.

Official Program

ACKNOWLEDGEMENTS

The John Wesley Powell Research Conference Committee would like to acknowledge the contributions of several individuals.

This conference could not have been a success without the contributions of Pat Neustel, Associate Provost's Office, in organizing many aspects of the conference and assembling and printing the program booklet.

The invaluable assistance provided by Mike Welsh and his staff at Sodexo Campus Services in setting up breakfast, luncheon and other refreshments is gratefully acknowledged.

The assistance provided by Patrick McLane of Information Technology in setting up computer equipment in all rooms is greatly appreciated.

John Wesley Powell Research Conference Committee:

- Mike Seeborg (Economics)
- David Vayo (Music)
- Natalie Smoak, Psychology

SCHEDULE OF EVENTS

Saturday, April 18, 2009

8:30 a.m.	Continental Breakfast and Poster Setup	Science Commons
9:00 a.m.	Poster Session A	Science Commons
10:00 a.m.	Oral Presentations – <i>Session One</i> Sessions 1 through 4	CNS
11:00 a.m.	Oral Presentations – <i>Session Two</i> Sessions 5 through 8	CNS
11:00 a.m.	Music Student Composition Performances	CNS C101
12:15 p.m.	Luncheon	Main Lounge
1:30 p.m.	Keynote Address: Andrew Postlewaite	Anderson Auditorium-CNS C101
2:30–4:00 p.m.	Poster Session B	Science Commons
2:30–4:00 p.m.	Music Composition Video (repeated every 7 minutes)	CNS Dance Studio B
2:30–4:00 p.m.	Senior Art Show and Critique	Merwin and Wakeley Galleries

KEYNOTE SPEAKER

“WHERE DO PEOPLE’S PREFERENCES COME FROM?”

Dr. Andrew Postlewaite

1:30 p.m. Anderson Auditorium (C101)

Andrew Postlewaite is a distinguished economist at the University of Pennsylvania who has published broadly in the most prestigious economics journals. His work spans several fields in economics, including the areas of social norms, game theory, incentives, market structure, public policy and regulation.

He graduated with a BA in economics from Illinois Wesleyan University in 1965 and completed a PhD in applied mathematics from Northwestern in 1974. Illinois Wesleyan awarded him an honorary doctorate in 2001.

After several years at the University of Illinois, Andrew Postlewaite accepted a faculty position at the University of Pennsylvania. He was the Chairperson of the Department of Economics at Pennsylvania from 1982-87 and from 1991-96. He also has had a large number of visiting appointments at prestigious institutions, including Princeton, Stanford and the Center for Operations Research and Econometrics in Louvain, Belgium.

He was honored by the University of Pennsylvania when he received the Harry P. Kamen Professorship in 2003. Since 2005, Andrew Postlewaite has been a Director of the National Bureau of Economic Research.

STUDENT PARTICIPANTS

Oral and Poster Presentations

Veronica Angeles	P1	Kevin Lewis	Music
Matthew Ballenger	P2	Stephen Little	P25
Catherine Bayles	P3	Kathleen Louis	P26
Chris Betzle	P4	Sudil Mahendra	P27
Susan Blunck	P5	Melinda Mallory	P28
Lauren Booth	O4.2	Harirajan Mani	P21
Jason Bothwell	P1	Thomas Marlow	P29
Chris Brackett	P6	Yara Massinga	P30
Erin Bradley	O5.1	Laura Maxwell	P31
Daniel W. Burke	O4.1	Colleen E. McShane	P32
James Carolan	P7	Emily Meade	P33
Natalie Chase	P8	Michelle Meehan	P34
Patrick Chess	P5	Rachel Miller	P35
Michael Chiodo	P9	Lauren Nelson	O6.1
Lydia Choi	P10	Lauren O'Connor	P37
Adam Clark	O3.1	Paul Oehrlein	O1.2
Kacie Dieter	P11	Vijeta Pamudurthy	P36
Jacqueline Dowjotas	P12	Karin Peterson	P38
Noah Dunham	P13	Amanda Pilgrim	P39
Melanie Essayans	P14	Ross Pingolt	P40
Jennifer Faust	P15	Daniel M. Podgorski	P41
Leah Goldberg	P16	Preston Prior	Music
Casey Hamm	P17	Kirsten Pufahl	P43
Alison Harford	P18	Bryan Rea	O2.2
Katie Heaney	O4.3	Elizabeth Riggs	P42
Allison Heim	P19	Thure Ross	P44
Kari Irwin	O8.1	Isabella Rossi	P45
Qingfan Jiang	Music	Mary Roznovsky	P46
Emily Jones	P5	Elizabeth Rupprecht	P47
Mark Kasperczyk	O7.1	Chris Santee	P48
Thomas Kirn	O4.4	Scott Schumann	Music
Cory Kline	P20	Hillary Sellers	O5.2
Margaret Kocher	P22	Lukasz Sewera	P49
Anna Konradi	O1.1	Ashley Shah	P50
Jason Koval	P5, O2.1	Paul Sierszulski	P41
Scott W. Krabbe	P21	Kevin Slattery	O1.3
Katie Krempely	P23	Catherine Smith	P51
Phillip R. Lazzara	P24	Alison Smith	O7.2

continued.....

STUDENT PARTICIPANTS

Oral and Poster Presentations

Matthew Spafford	P52
Katherine Stankiewicz	P54
Leann Stuber	O6.2
Steven Sturlis	P53
Evan Tammen	Music
Sara Thome	P55
Marie-Claudine Villacorta	O3.3, O8.2
Carly Visk	P56
Nicole Wagner	P57
Julia M. Warren	P59
Joel Wicks	P58
Erica Woodall	P29
Matthew R. Young	O5.3
Kristin Zavislak	O6.3
Susan Zhong	P60

**BA/BFA SENIOR CRITIQUE HONORS
SCHOOL OF ART**

Saturday, April 18, 2009, 2:30 p.m., Merwin and Wakeley Galleries

Student Presenters:

Katie Allen

Helen Conklin

Emily Dieling

Marli Jones

Rachel Low

Laura Murray

John Nelson

Andrea Winsor

Matt Young

Refreshments will be served

MUSIC COMPOSITION STUDENT PRESENTATIONS

Saturday, April 18
11 a.m.
Center for Natural Sciences C101

Theme and Variations for Solo Violin (2008)

Qingfan Jiang '12

Erin Donegan, violin

Free Improvisation

Evan Tammen '09, oboe
Preston Prior '09, trumpet

(waterfall) (2008)

Scott Schumann '09

Scott Schumann, Dan George, trumpet
Jessica Pearce, horn
Jamie Burchett, trombone
Don Killinger, tuba

In addition, the following composition will be running continuously in the Center for Natural Science Dance Studio B from 2:30pm to 4:00pm

Aleph

Kevin Lewis '09

Digital audiovisual composition

Music Presentation

THEME AND VARIATIONS FOR SOLO VIOLIN

Qingfan Jiang and David Vayo*
School of Music, Illinois Wesleyan University

Theme and Variations takes its title from a musical form in which a self-contained theme is repeated and changed in some way with each successive variation. Historically, many composers have favored this form. A well-known example is Mozart's *Twelve Variations on "Ah, Vous Dirai-Je, Maman"*, the song which we now refer to as *Twinkle Twinkle Little Star*.

My composition, though it is a theme with five variations, may not be easily recognized as such. The sections do not necessarily have clear melodic connections with one another; each rather develops into the next one. The theme is based on a MM7th chord. The first variation adds a major 3rd above it; the second variation expands the major 3rd to a perfect 4th; the next variations continue expanding the interval to a tritone, a perfect 5th and finally a minor 6th. Also, the ending figures of the theme and each variation have the same intervallic content. The macro structure of this composition is similar to an "arch" in its symmetry: the first and last variations are expressive and romantic; the second and fourth ones are light and airy; the third (central) variation is abstract yet playful. Moreover, the sound of the solo violin varies in different ways such as legatos, staccatos, pizzicatos, tremolos and flute-like harmonics. It is my hope that this composition will be an interesting "journey" of *Theme and Variations*.

Music Presentation

**FREE IMPROVISATION: THE AMALGAM OF INTUITION,
CREATIVITY, AND CRITICAL LISTENING**

Preston Prior, Evan Tammen and David Vayo*
School of Music, Illinois Wesleyan University

Free improvisation is the spontaneous and simultaneous creation and performance of music. Musicians communicate through musical gesture, body language, and shared musical intuition, with the latter serving as a guiding pole star. As an improvisation develops, musical ideas are passed between each performer much like in a verbal dialogue, but the direction of the music travels along an intuitive shared understanding between the participants. While improvising, a musician actively listens to the other musician or musicians and reacts to their musical ideas and styles. The minds of performers achieve a kind of unity through this type of critical listening. During this performance, the audience will hear a free improvisation and will gain an understanding as to how a unified piece can be created by two independent minds without previously established parameters or verbal communication.

Music Presentation

(waterfall)

Scott Schumann and David Vayo*
School of Music, Illinois Wesleyan University

In my piece, “(waterfall)”, I attempted to capture three aspects of these naturally occurring bodies of water that strike me the most when I observe them. The first is the beauty of the water itself: watching the light refract off of the individual droplets that creates such beautiful colors led me to employ harmonies that illustrate this random beauty of water. To portray the speed and ferocity of the water as it falls over the edge, I utilized complex, driving rhythms. The third is simply the feeling of awe that comes over a person witnessing one of these beautiful, natural falls. The music in this piece goes through many changes in character and mood, much like a person witnessing a waterfall may go through.

Music Composition

ALEPH

Kevin Lewis and David Vayo*
School of Music, Illinois Wesleyan University

"Aleph" is an original musical composition that combines electronic music and video in a continuous installation format. The piece explores ways to subtly vary pitch, amplitude, stereo panning, color, and TV interference over time to create compelling audio and visual effects. The twelve minute piece is meant to be repeated continuously for several hours, and audience members are invited to come and go as they please.

ORAL PRESENTATIONS - SESSION 1
10:00 – 11:00
CENTER FOR NATURAL SCIENCES (E103)
MODERATOR: Tian Mao

- 1.1 Anna Konradi
Economics
- 1.2 Paul Oehrlein
Economics
- 1.3 Kevin Slattery
Economics

ORAL PRESENTATIONS - SESSION 2
10:00 – 11:00
CENTER FOR NATURAL SCIENCES (E102)
MODERATOR: Sudil Mahendra

- 2.1 Jason Koval
Environmental Chemistry
- 2.2 Bryan Rea
Biology

ORAL PRESENTATIONS - SESSION 3
10:00 – 11:00
CENTER FOR NATURAL SCIENCES (E101)
MODERATOR: Laura Gaffey

- 3.1 Adam Clark
Political Science
- 3.2 Marie-Claudine Villacorta
Sociology and Anthropology

ORAL PRESENTATIONS - SESSION 4
10:00 – 11:00
CENTER FOR NATURAL SCIENCES (E104)
MODERATOR: Jennifer Ceisel

- 4.1 Daniel W. Burke
Hispanic Studies
- 4.2 Lauren Booth
Hispanic Studies
- 4.3 Katie Heaney
Hispanic Studies
- 4.4 Thomas Kirn
Hispanic Studies

ORAL PRESENTATIONS - SESSION 5
11:00 – 12:00 noon
CENTER FOR NATURAL SCIENCES (E104)
MODERATOR: Jennifer Ceisel

- 5.1 Erin Bradley
Hispanic Studies
- 5.2 Hillary Sellers
Hispanic Studies
- 5.3 Matthew Young
Hispanic Studies

ORAL PRESENTATIONS - SESSION 6
11:00 – 12:00 noon
CENTER FOR NATURAL SCIENCES (E103)
MODERATOR: Lesley Hunter

- 6.1 Lauren Nelson
MCLL
- 6.2 Leann Stuber
English
- 6.3 Kristin Zavislak
Greek and Roman Studies

ORAL PRESENTATIONS - SESSION 7
11:00 – 12:00 noon
CENTER FOR NATURAL SCIENCES (E102)
MODERATOR: Carissa Nemmers

7.1 Mark Kasperczyk
 Physics

7.2 Alison Smith
 Physics

ORAL PRESENTATIONS - SESSION 8
11:00 – 12:00 noon
CENTER FOR NATURAL SCIENCES (E101)
MODERATOR: Amanda Clayton

8.1 Kari Irwin
 Religion

8.2 Marie-Claudine Villacorta
 International Studies

Presentations are 10-15 minutes in length. If time permits, there will be a question-and-answer period for all presenters following the final presentation.

Oral Presentation O1.1

**BUYING VOTES: EXAMINING TUFTE'S POLITICAL BUSINESS CYCLE
UNDER AN ADAPTIVE EXPECTATIONS FRAMEWORK**

Anna Konradi and Michael Seeborg*
Economics Department, Illinois Wesleyan University

This paper addresses the extent to which presidents and their parties have been able to exert influence over economic variables in the months preceding a general election. Much of the existing literature suggests that there may be an important cyclical pattern between the four-year election cycle and economic variables such as real GDP growth and real disposable income. Using data from the Council of Economic Advisors and the American National Election Study, this paper finds moderate evidence for the existence of a political business cycle. Subsequent analysis reveals that during elections with significantly high and low GDP growth rates, election results can be perfectly predicted based on the theoretical model. Additionally, during a severe recession, the major election issue will always be the economy.

Oral Presentation O1.2

DETERMINING THE FUTURE INCOME OF COLLEGE STUDENTS

Paul Oehrlein and Michael Seeborg*
Economics Department, Illinois Wesleyan University

Many people invest a lot of money in order to go to college with the hope that they will eventually be rewarded with higher salaries. This paper attempts to determine what aspects of college are most important in determining the future income of students. In particular, this paper studies whether GPA is an important determinant of income as well as whether some majors are better investments than others after controlling for other factors. In addition, the effect of math and verbal ability on income and how they interact with different fields of study are studied. The data comes from the National Longitudinal Study of Youth database and ordinary least-squares regressions are used. The regressions show that grades, natural ability, and major all significantly affect income.

Oral Presentation O1.3

**PREDICTING MAJOR LEAGUE TALENT THROUGH THE
FIRST-YEAR PLAYER DRAFT**

Kevin Slattery and Robert Leekley*

Economics Department, Illinois Wesleyan University

The Major League Baseball first-year player draft is a relatively unexplored topic. Until two years ago it was not even televised, even though other major sports drafts like basketball and football are major television events. I predict the probability of reaching the major leagues and the probability of a player “making it big” in the major leagues for a player drafted based on a series of variables, like draft position, whether a player is left-handed, and the schooling the amateur has received. This should help a team determine which players are most risky, and which players are most likely to make it to and succeed in the major leagues. The conceptual framework underlying my work is human capital theory. A multivariate regression model is used to predict the probability that a drafted player will make it to the major leagues. The major results of the study are that draft rank is the most important variable; scouts are effective at identifying and ranking talent. The other important finding is that college players are significantly more likely to make the major leagues, but high school players are more likely to make it big and become superstars in the major leagues.

Oral Presentation O2.1

**A COMPARISON OF AQUATIC NITRATE AND PHOSPHATE LEVELS BETWEEN
TWO GOLF COURSES IN THE BLOOMINGTON-NORMAL COMMUNITY**

Jason Koval and Given Harper*

Environmental Studies and Chemistry Departments, Illinois Wesleyan University

Two golf courses in the Bloomington-Normal community in central Illinois were tested for nitrate and phosphate concentrations in their ponds. One golf course (The Den) is Audubon International certified while the other golf course (Ironwood) is not. This study tries to establish if differing environmental management practices can contribute to significantly different concentrations of nutrients. It was determined that the nitrate concentration was higher at the non-certified golf course, while the phosphate concentrations at both courses were essentially negligible. The implications of these findings are discussed and were presented to both golf courses. It is the hope of this paper that the non-certified golf course will seek improved management practices, with regard to environmental impact, after observing the differences in nutrient concentrations.

Oral Presentation O2.2

**BIOCHEMICAL CHARACTERIZATION OF THE
CANDIDA ALBICANS PBGS ENZYME**

Bryan Rea and David Bollivar*

Biology Department, Illinois Wesleyan University

The enzyme porphobilinogen synthase (PBGS) catalyzes the reaction that forms porphobilinogen, an important precursor in the biosynthetic pathways that lead to the production of heme, chlorophyll, and other tetrapyrroles. Previous studies have indicated that PBGS often exists in two states, termed morphoeins, an active octameric form and inactive hexameric form. Recent evidence has shown that certain molecules may be able to lock the enzyme as a hexamer, thereby inactivating it. Such selective agents against the PBGS enzyme could be very effective in dealing with pathogenic organisms. One such pathogen is *Candida albicans*, a fungus responsible for thrush, most common in babies and immunocompromised individuals, e.g. those with AIDS. The goal of our current study was to isolate, purify, and characterize the PBGS enzyme from *C. albicans*. Our data indicate that our purified product is indeed capable of catalyzing the reaction to form porphobilinogen. Furthermore, our results indicate that the optimum pH of the enzyme is approximately 8.7, and it requires the presence of zinc and reducing agents. Further study will shed light on the optimal level of zinc required, other metal ion requirements (such as magnesium), and identification of possible inhibitors of enzymatic activity. The results obtained will provide a much clearer picture of the general biochemistry of the *C. albicans* PBGS. Such information combined with structural studies, like NMR spectroscopy or X-ray crystallography, may lead to the development of an agent that can selectively inhibit the *C. albicans* PBGS enzyme.

Oral Presentation O3.1

TRUST ON THE INTERNET: A VIRTUAL REALITY?

Adam Clark and Greg Shaw*

Political Science Department, Illinois Wesleyan University

Social capital has recently gained popularity, but it is not a new topic. The relationship between civic engagement and trust has been well tested, and it has been used in the past to help diagnose the health of a society. Unfortunately with evolving technology, some of this research may be now obsolete. The internet has changed the way that people communicate and learn. Since the internet has reached such high proliferation rates, especially among the younger generations, it is likely to have an effect on the relationship between civic engagement and trust. Using NES survey data primarily, I tested the effects of the internet on said relationship, and internet access had an effect in the predicted direction.

Oral Presentation O3.2

**PERFORMING PEACE THROUGH MUSIC: A CASE STUDY ON
CHOIRS IN POST-CONFLICT SOCIETIES**

Marie-Claudine Villacorta and Rebecca Gearhart*

Sociology and Anthropology Department, Illinois Wesleyan University

While music, dance, and theater have been used to propagate nationalist ideologies as well as to justify war and genocide, the performing arts, especially music, can affect positive change and instill peace among people. This paper delves into some of the ways in which choirs have been used as a particularly creative approach to peace building in post-conflict societies. By focusing on three choral groups: the Bi-Communal Choir for Peace in Cyprus, the Pontamina Interreligious Choir in Bosnia and Herzegovina, and the African Children's Choir, this research demonstrates how musical production can ameliorate ethnic, class, and religious differences, and promote healing and reconciliation by communicating a message of peace among choir members, their audience, and the community at large.

Oral Presentation O4.1

**LANGUAGE IDEOLOGY AND RACISM: THE CASE OF
MIDDLE-CLASS LATINOS IN BLOOMINGTON, ILLINOIS**

Daniel W. Burke and Christina Isabelli*
Hispanic Studies Department, Illinois Wesleyan University

Language ideology asserts that languages are imbued with certain social, political, and moral values. In the US, many scholars have suggested that the English-speaking majority uses language ideology to reinforce racial, political, and economic domination of Latinos. The present study seeks to replicate the study of Cobas and Feagin (2008) "Language Oppression and Resistance: The Case of Middle Class Latinos in the United States." Using interviews with several middle-class Latinos working at State Farm in Bloomington, IL, this study documents their personal experiences with perceived language oppression. By extrapolating these case studies of Latinos in Bloomington, IL, to the larger body of literature on language ideology and racism, this work continues the conversation on how language ideology in a Midwestern city of the US may maintain racial (in)equality and if the preservation of the Spanish language and culture of Spanish-speakers is threatened.

Cobas, Jose A., and Joe R. Feagin, 2008. The Case of Middle Class Latinos in the United States. Ethnic and Racial Studies 31.2: 390-410.

Oral Presentation O4.2

LANGUAGE PATTERNS AND ATTITUDES OF HISPANIC UNIVERSITY STUDENTS

Lauren Booth and Christina Isabelli*

Hispanic Studies Department, Illinois Wesleyan University

This study was designed to understand the Spanish and English language patterns and language attitudes of three Hispanic students at a small university in the Midwest. Participants completed an online questionnaire, which collected information on demographics, language use with different individuals, in various activities, and language attitudes towards English and Spanish. Patterns emerged concerning positive language attitudes toward Spanish but there was some variation in terms of background and the subsequent language use with different individuals and in different situations. This study indicates that there is language maintenance among this group. When these results are compared to a previous study of Hispanic High School students in a large city, there are both similarities and differences. In both studies, English was widely used to communicate with younger people. However, in this study participants reported using more Spanish now than when they were younger and also plan on using Spanish in the future. Therefore, this study may indicate that university students display somewhat different language patterns and attitudes.

Oral Presentation O4.3

**SPANISH LANGUAGE USE AMONG HISPANIC BILINGUALS: THE ROLE OF THE
MOTHER TONGUE IN THE FORMATION OF CULTURAL IDENTITY**

Katie Heaney and Christina Isabelli*

Hispanic Studies Department, Illinois Wesleyan University

Sociolinguistic studies on minority languages often cite the relationship between language use and cultural identity, asserting that the maintenance of one's mother tongue contributes to that individual's sense of self and of community. The present study examines this relationship, and theorizes that a higher level of minority-language use (in this case, Spanish) is conducive to a stronger sense of belonging and identity within the minority community. A 30-question survey was distributed to 15-20 bilingual Hispanic employees at State Farm Insurance, a predominantly white workplace setting, in Bloomington, Illinois. This case study provides a focused insight into the arena of minority identity. The findings of this study indicate a positive correlation between one's level of Spanish use and his/her sense of belonging to, and identity within, the larger Hispanic community.

Oral Presentation O4.4

**EDUCATIONAL ATTAINMENT AND SPANISH MAINTENANCE: A STUDY OF THE
HISPANIC POPULATIONS OF CHICAGO AND THE UNITED STATES**

Thomas Kirn and Christina Isabelli*

Hispanic Studies Department, Illinois Wesleyan University

With the recent growth of the Hispanic population in the U.S., it is important to study its integration into a majority English-speaking society in order to better understand the social effects of Spanish language maintenance. This study examines the correlation between the Hispanic population's educational attainment and its maintenance of native Spanish. Chicago Hispanics are the focus of this study due in part to the lack of current investigations of this population. This sub-population is then compared to the U.S. Hispanic population as a whole using data collected from the Public Use Microdata Sample of the 2005-2007 American Community Survey, which includes 2,726 Chicago participants and 202,390 U.S. participants. The data show that the American educational system may not support native Spanish-speakers and suggests that they assimilate linguistically before they are given the opportunity to advance their level of education.

Oral Presentation O5.1

**CODE-SWITCHING PATTERNS AMONG BILINGUAL FOURTH-GRADE STUDENTS
IN BLOOMINGTON, IL: POTENTIAL IMPLICATIONS FOR EDUCATORS**

Erin Bradley and Christina Isabelli*

Hispanic Studies Department, Illinois Wesleyan University

With a growing Spanish-speaking population in the United States, linguistic studies related to this group become increasingly important. One aspect of linguistics with particular significance to education is code-switching, or the alternation of two languages. Understanding code-switching patterns and its use is important in assessing fluency and language acquisition, as well as language shift dynamics, or linguistic changes due to such factors as dual language contact. Drawing upon previous investigations, this study focuses specifically on the use of code-switching among bilingual fourth grade students. Through analysis of verbal interactions during a school day, this study will provide a basic assessment of the quantity and quality of code-switching utilized, as well as how the students code-switch differently among each other, with bilingual teachers, and with monolingual English-speaking teachers. Findings of this study will also provide potential implications for educators of bilingual students.

Oral Presentation O5.2

**HERITAGE LANGUAGE MAINTENANCE: A STUDY OF CENTRAL
ILLINOIS TEACHER ATTITUDES**

Hillary Sellers and Christina Isabelli*

Hispanic Studies Department, Illinois Wesleyan University

This article presents a study of teachers' attitudes toward students' maintenance of the home language, and also examines concordance of these attitudes with teacher practices when dealing with language minority students. The sample consisted of 48 teachers with varying levels of experience teaching language minority students. Participants were recruited from two school districts in Bloomington-Normal, Illinois, and were asked to complete an online questionnaire. In a 2006 study carried out in California, Lee and Oxelson found that teachers who taught in a bilingual or ESL classroom and teachers that had experience with a language other than English had more positive attitudes toward bilingualism and heritage language maintenance. This study replicates Lee and Oxelson's survey and will determine whether the findings maintain their validity in this Central Illinois community.

Lee, J., & Oxelson, E. (2006). "It's not my job": K-12 teacher attitudes toward students' heritage language maintenance. *Bilingual Research Journal*, 30(2), 453-477.

Oral Presentation O5.3

**RETENTION OF SPANISH IN THE HOME: A REPLICATION OF
HART-GONZALEZ AND FEINGOLD (1990)**

Matthew R. Young and Christina Isabelli*
Hispanic Studies Department, Illinois Wesleyan University

This paper is a replication study of Hart-Gonzalez and Feingold (1990). The authors' intention was "to discover the extent to which cumulative language choice (that is, retention or loss of Spanish in the home) can be determined by knowledge of an individual's social and personal characteristics" (13). To interpret data cohesively from a diverse population, the researchers examined their data through an amalgam of methods used in previous studies. The problem of Spanish retention was divided "into three concepts: (1) time and change, (2) ethnicity, and (3) language choice" (6). Information was gathered from the *Current Population Survey 1979* (Nov. 1979 CPS). The present study is an analysis of the *United States Census 2000* that uses the same methods as the original study.

Hart-Gonzalez, L., & Feingold, M. (1990). Retention of Spanish in the Home. *International Journal of the Sociology of Language*, 85, 5-34.

Oral Presentation O6.1

**SURROGATE FREEDOM: TRANSMITTING DEMOCRACY TO THE
SOVIET UNION AND EASTERN BLOC**

Lauren Nelson and Marina Balina*

Modern and Classical Languages and Literatures Department, Illinois Wesleyan University

During World War II and throughout the Cold War, both western powers and the Soviet Union implemented international radio broadcasting as propaganda. The importance of broadcasting as a political tool was recognized from the very early days of Soviet power. Vladimir Lenin first advocated and utilized radio as a tool of national unification in order to spread revolutionary ideas to far removed regions and target the illiterate population. In the hands of democratic nations, radio transcended political and geographical borders and effectively broadcasted information and news that had been suppressed by the Soviet Union. The same shortwave radios that were used to listen to Soviet broadcasts were eventually tuned to Western radio stations that contributed to the ideological battle between the Soviet Union and Western powers. This exchange of information and ideas between countries indicates a complex relationship between international and domestic media: it introduces instances where the two are blurred, combined, and when one serves as a surrogate for the other, as Radio Free Europe and Radio Liberty (RFE/RL) did for Eastern European countries and the republics of the Soviet Union.

Oral Presentation O6.2

**THE CONSTRUCTION OF INTELLECTUAL WOMEN
IN VICTORIAN SOCIETY**

Leann Stuber and Barbara Bowman*
English Department, Illinois Wesleyan University

Throughout the Victorian era, the appearance of intellectual, independent women became common in society, particularly in the role of governess or school teacher. The changing social trends caused this phenomenon, in that women were able to access formal education for the first time in the Victorian period. However, the new ideas and roles intellectual females could have were seemingly at odds with the existing social norms for women. To ease this tension and redefine the social expectations for women, male and female writers constructed intellectual women within literature, showing how these women would operate in society. Two excellent examples of intellectual females created in the Victorian era are Jane Eyre, the heroine of Charlotte Brontë's *Jane Eyre*, and Mina Harker (née Murray) of Bram Stoker's *Dracula*. As would be expected of the time, Stoker, a male writer, defines the female intellectual within socially acceptable norms for women, demonstrating that intelligence is compatible with marriage and domesticity; on the other hand, Brontë, a female writer, attempts to redefine social norms while constructing the intellectual female, to show that intelligent women will act in socially acceptable ways, but only on their own terms and not those of society.

Oral Presentation O6.3

**THE ARTLESS JEW AND THE ICONOPHOBIC CHRISTIAN:
AN ARTISTIC APPROACH TO THE 'PARTING OF THE WAYS'**

Kristin Zavislak and Nancy Sultan*

Greek and Roman Studies/Religion Departments, Illinois Wesleyan University

After the destruction of the temple at Jerusalem in 70 CE only two major divisions of Second Temple Judaism survived: one that would eventually become Rabbinic Judaism and one that would transform into a completely separate religion, Christianity. Without a doubt these two religions grew out of one, but when and how this happened is a topic of hot debate among scholars today. These scholars often use the biased accounts of first century historians, as well as the New Testament scriptures, in an attempt to answer these questions, but they're only looking at *words*. Through an examination of the catacombs and the buildings found at Dura-Europos, the earliest examples of 'Jewish' and 'Christian' art, I believe the answers to the questions of when and how the Ways finally parted can be best found by looking instead at *pictures*. In particular, how one motif is interpreted by both Christian and Jewish artists within their most private spaces of worship: Abraham's sacrifice of Isaac.

Oral Presentation O7.1

OBSERVATION OF A NEUTRON UNBOUND STATE IN ^{26}F

Mark Kasperczyk and Nathan Frank*
Physics Department, Illinois Wesleyan University

A neutron unbound state of ^{26}F was observed for the first time. The ^{26}F isotopes were produced by a proton-neutron exchange reaction from an 84.75 MeV/u ^{26}Ne beam on a ^9Be target at the fast-fragmentation radioactive beam facility of the National Superconducting Cyclotron Laboratory at Michigan State University. The decay of the ^{26}F isotopes resulted in ^{25}F isotopes and neutrons which were detected in coincidence using a suite of charged particle detectors and the Modular Neutron Array (MoNA), respectively. Using a simulation, different combinations of Breit Wigner and Maxwellian distributions were compared to see which arrangement fit the data best. For the simulation, a two-body reaction model was used, as was a Q-value of -19.0. Preliminary results indicate a resonant state at approximately 200 keV.

Work supported by National Science Foundation Grants PHY-0606007 and PHY-055445

Oral Presentation O7.2

OBSERVATION OF A LOW-LYING NEUTRON UNBOUND STATE IN ^{25}F

Alison Smith and Nathan Frank*

Physics Department, Illinois Wesleyan University

A neutron unbound state from ^{25}F has been observed for the first time. Prior experimental data on neutron-rich fluorine isotopes indicate differences for bound excited states as compared to nuclear shell model predictions. The ^{25}F isotopes were produced by one-proton removal from an 86 MeV/u ^{26}Ne beam on a Beryllium target at the fast-fragmentation radioactive beam facility of the National Superconducting Cyclotron Laboratory at Michigan State University. The subsequent decay of the ^{25}F isotopes resulted in ^{24}F and neutrons which were detected in coincidence. The charged particles were bent away from the neutrons with a superconducting magnet and analyzed in a suite of charged particle detectors. The neutrons were detected in the Modular Neutron Array (MoNA). The properties of the charged particles and neutrons were used to reconstruct a decay energy spectrum for ^{25}F which was compared to simulations. Preliminary results indicating a resonant state at approximately 30 keV will be discussed.

Work supported by National Science Foundation Grants PHY-0606007 and PHY-055445

Oral Presentation O8.1

**"WIPE OUT THIS MENACE OF TERROR": THE UNOFFICIAL HINDU
NATIONALISM OF AN OFFICIALLY PRO-PEACE HINDU REFORM MOVEMENT**

Kari Irwin and Brian Hatcher*
Religion Department, Illinois Wesleyan University

The Bochasanwasi Shri Akshar Purushottam Swaminarayan tradition is a sect of the Swaminarayan devotional Hindu reform movement, which was founded in Gujarat in the 19th century. It has risen to worldwide prominence in the last 30 years due to its remarkable growth among the Gujarati diaspora. It is now perhaps one of the most visible faces of Hinduism outside of India. Though it is officially and publicly a pro-peace movement, the fundamentalist aspects of the tradition tend it toward Gujarati nationalism, and perhaps, more intolerant forms of Hindu Nationalism. I argue that the place to look for these nationalistic undercurrents is at the unofficial level, and in my paper I attempt to present evidence of the Swaminarayan sect's connections with hardline Hindu ideology.

Oral Presentation O8.2

**'FULL STOMACH PEACE' IN BOSNIA AND HERZEGOVINA: ECONOMIC
DEVELOPMENT AS A TOOL FOR POST-CONFLICT PEACEBUILDING**

Marie-Claudine Villacorta and Micheal Weis*

International Studies Department, Illinois Wesleyan University

In an age of limited financial resources and continued power struggles, laying the foundation for post-conflict peace-building is a laborious task. This is especially evident in Bosnia and Herzegovina (BiH), which continues to be shadowed by its history of ethnic division and genocide. Experts on the ground claim, however, that politicians have only used 'ethnic' and 'religious' differences as an excuse to retract from actual economic problems, and that economic development should be prioritized in BiH's framework for long-term peace. The paper, hence, examines whether an economic-focused blueprint to peace is appropriate to BiH. Through a historical context of the war in the Former Yugoslavia during the 1990s, a report on BiH's economic indicators and present challenges, and an analysis of the economic reforms of the government, the World Bank and the European Union, the paper concludes that economic development needs to be emphasized in peace-building efforts, but not at the expense of forgoing political reforms and reconciliation efforts.

POSTER SESSION A

9:00 - 10:00 a.m.

Odd-Numbered Posters

POSTER SESSION B

2:35 – 3:35 p.m.

Even-Numbered Posters

Note: Student's name is underlined, faculty advisor designated with *

During each poster session the author will be present to discuss her or his research with conference attendees, and answer questions.

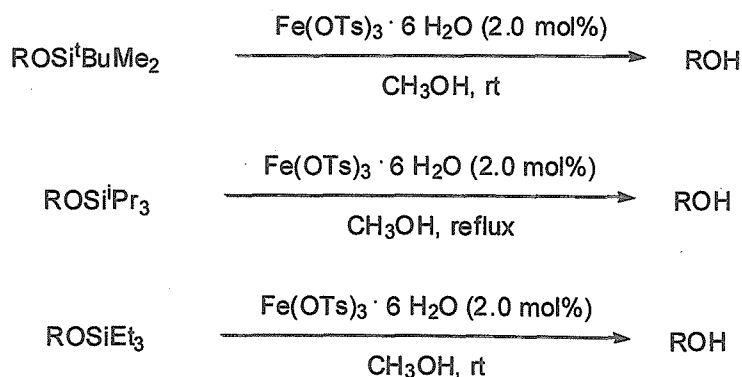
Please remove your posters by 4:00 p.m.

Poster Presentation P1

IRON (III) TOSYLATE CATALYZED DEPROTECTION OF TBDMS ETHERS

Jason M. Bothwell, Veronica V. Angeles, Maggie E. Olson, and Ram S. Mohan*
Chemistry Department, Illinois Wesleyan University

tert-Butyldimethylsilyl (TBDMS) ethers are useful protecting groups for alcohols in organic synthesis. Traditional methods of deprotecting TBDMS ethers utilize tetrabutylammonium fluoride $[(CH_3)_4N^+F^-]$, a potentially carcinogenic compound that can be difficult to handle. We have developed an iron (III) tosylate catalyzed deprotection of TBDMS ethers in CH_3OH as the solvent. We have also extended this method to the deprotection of triethylsilyl (TES) and triisopropylsilyl (TIPS) ethers. Iron (III) tosylate is an attractive catalyst because of its low cost, low toxicity, and its high ease of handling. The results of this study will be presented.



Poster Presentation P2

ACCOUNTABILITY: ADAPTING AID SOLUTIONS TO RWANDA

Matthew Ballenger and Michael Weis*

International Studies Department, Illinois Wesleyan University

Rwanda is currently a recipient of a large amount of foreign aid dedicated to rebuilding and restructuring the country. In particular, the World Bank and the IMF have led the way in aid disbursal, but do their methods have room for improvement? Critics of aid policy to the developing world cite conditionality, assumed links between democracy and economic growth and a lack of understanding about domestic politics as being extremely detrimental forces to current policies, yet the aid organizations have done very little to attempt to correct for these deficiencies due to a lack of accountability to developing countries. As a result, they have come in conflict with developing countries over policy goals, which leads to a breakdown in efficiency and donor/recipient relations. Rwanda offers one of the more ideal countries in which to attempt to find solutions to these problems. A country of 6% GDP growth per year since 1994, Rwanda is listed by the World Bank as one of 2008's top twenty reforming nations. This paper looks at how restructuring the way aid is delivered to countries such as Rwanda could resolve some of these policy conflicts and could result in an increase in efficiency, or at the very least a reduction of cost while maintaining economic growth and current levels of social service.

Poster Presentation P3

**IDENTITY, CULTURE, AND SELF:
AFRICAN STUDENTS AT ILLINOIS WESLEYAN UNIVERSITY**

Catherine Bayles and Rebecca Gearhart*
Anthropology Department, Illinois Wesleyan University

This poster presentation aspires to facilitate discussion pertaining to topics significant to the African student body at IWU. Through the use of photography and collaborative ethnographic methods, African students have determined that they share a dual-identity that influences how they view their heritage and connect to their communities and the world. Upon reflection of the photographs taken during the ethnographer's participant-observation of significant activities, African students have revealed cultural universals that they share including the clash with how society views them and how they view themselves. The research highlights the connections they share as Africans: respect, a connection to the past, and dignity in a set of values that is internalized by each member through personal interests including their participation in the African Students Association and intramural soccer, and their love for African music. A universal feeling expressed through the poster presentation is the students' desire to balance African and American cultural influences while effectively representing themselves as members of the African community.

Poster Presentation P4

UTILIZING PHAGE DISPLAY TO IDENTIFY NOVEL PEPTIDES THAT BIND TO SICKLE CELL HEMOGLOBIN

Chris Betzle and Brian Brennan*
Chemistry Department, Illinois Wesleyan University

Sickle Cell Disease affects numerous individuals and at the present there is no effective treatment. Sickle Cell disease is caused by a mutation in the gene that codes for hemoglobin which results in the aggregation of hemoglobin molecules causing the “sickled” shape of the red blood cells. By discovering peptides that will bind to Sickle cell hemoglobin and disrupt the interaction between hemoglobin molecules, the aggregation of Sickle cell hemoglobin in red blood cells cannot occur. A technique called phage display has been utilized to find novel peptides that will bind Sickle cell hemoglobin. Phage display is a selection technique that allows peptides with desired properties to be extracted from a large collection of variants utilizing bacteriophage. A library of M13 bacteriophage, expressing random 12-mer peptide sequences on the phage minor coat protein were utilized in this research. Phage display has been carried out on both adult human hemoglobin and Sickle Cell hemoglobin and based on the results it appears that phage display will allow for the identification of a novel peptide that will bind to Sickle Cell Hemoglobin that could potentially be used to develop a therapeutic to treat the disease.

Poster Presentation P5

**LEVELS OF ORGANOCHLORINE COMPOUNDS AND HEAVY METALS IN
NORTH AMERICAN GREY WOLVES (*CANIS LUPUS*)**

Susan Blunck, Patrick Chess, Emily Jones, Jason Koval
and Given Harper* and Jeff Frick*

Biology and Chemistry Departments, Illinois Wesleyan University

Sizeable grey wolf (*Canis lupus*) populations in North America are currently found in Alaska, Canada, Idaho, Michigan, Minnesota, Montana, Wisconsin, and Wyoming. Due to their location at the top of terrestrial food chains throughout their range, grey wolves may contain high levels of organochlorine (OC) pesticides (e.g., DDT) and metabolites due to biomagnification. Wolves may also be exposed to heavy metals (e.g., aluminum, cadmium, copper, iron, lead and zinc), which can reach high concentrations in areas where minerals have been mined. However, no studies have documented OC pesticides or heavy metals in grey wolves throughout their North American range, which is the purpose of this collaborative study with the U.S. Fish and Wildlife Service and with state and Canadian wildlife agencies. Wolves from Alaska, Idaho, Minnesota, Montana and the Yellowknife region of Canada were either found dead, trapped or were collected via lethal control methods. OC levels in wolf kidneys were determined via gas chromatography and levels of heavy metals were quantified via Inductively Coupled Plasma Emission Spectrometry. Levels of OCs and heavy metals are being analyzed statistically in relation to sex, age class and latitude. This study will provide information on the extent to which OC compounds and heavy metals are present in North American ecosystems.

Poster Presentation P6

**THE SYNTHESIS AND CHARACTERIZATION OF A
PEPTIDIC HEMOGLOBIN LIGAND**

Chris Brackett and Brian Brennan*
Chemistry Department, Illinois Wesleyan University

Sickle Cell Disease is a genetically inherited blood disorder that leads to the aggregation of hemoglobin molecules in the absence of oxygen. This aggregation leads to the formation of the characteristic sickled shape of the red blood cells. There are currently few treatments for this disorder, with the only cure being a risky bone marrow transplant. My research is focused on constructing a peptide that binds to sickle cell hemoglobin, preventing its aggregation. After constructing the peptide, I will couple it to a fluorescent molecule so that I can study the characteristics of the binding interaction.

Poster Presentation P7

HOMOLOGATION OF α -AMINO ACIDS TO β -AMINO ACIDS VIA A MODIFIED ARNDT-EISTERT SYNTHESIS

James Carolan and Brian Brennan*

Chemistry Department, Illinois Wesleyan University

The synthesis of molecules that mimic the structure and function of natural peptides has substantial therapeutic potential. Of the many peptidomimetics described in the literature, none have been studied as intensely as β -peptides. Their stability in cells and ability to bind to protein surfaces have made them invaluable tools to study and modulate biological systems. Composed of β -amino acids, these polymers are often synthesized on solid support. Unfortunately, the synthesis of the monomer β -amino acids often involves the use of explosive and toxic reagents. My research is focused on synthesizing β -amino acid monomers using more environmental and laboratory friendly reagents. Towards this end, I have employed a modified Arndt-Eistert synthesis to convert cheap, commercially available α -amino acids into their β -amino acid counterpart.

Poster Presentation P8

THE EFFECTS OF COACHING FEEDBACK ON PERFECTIONISM AND DISORDERED EATING IN COLLEGE ATHLETES

Natalie Chase and Natalie Smoak*

Psychology Department, Illinois Wesleyan University

Feedback given to athletes by their coaches is a topic that has not been extensively researched in terms of its effect on perfectionistic tendencies and disordered eating in athletes. It is important to reduce factors that are associated with disordered eating before the overt disordered eating behaviors can develop into a more severe clinical-level eating disorder. In investigating these links, I drew parallels between research that has shown negative effects from harsh *parental* feedback to hypothesize about the effects of *coaching* feedback. I hypothesized the following: 1. Feedback from coaches that is interpreted by athletes as harsh, ego-involved, or highly critical will be positively correlated with socially prescribed perfectionism in those athletes. 2. Athletes with higher levels of pre-existing self-oriented perfectionism will expect harsher and more critical feedback from coaches than athletes that have lower levels of pre-existing self-oriented perfectionism. 3. Unmet feedback expectations will be positively correlated with disordered eating behaviors. 4. Socially prescribed perfectionism will mediate the relation between harsh, ego-involved, or highly critical feedback and disordered eating behaviors. In the current study, 103 collegiate athletes reported their attitudes and behaviors concerning eating, body image, perfectionism, the feedback they received from their coaches, and the feedback they want from their coaches. In addition, 17 coaches reported the feedback they give to their athletes in the three domains of health, academics, and athletics. Results of the study examined correlations between socially-prescribed perfectionism and negative feedback, self-oriented perfectionism and athletes' expectations of feedback, unmet feedback expectations and disordered eating, and the relationship between socially-prescribed perfectionism, negative feedback, and disordered eating. The results have implications for both athletes and coaches.

Poster Presentation P9

**THE SYNTHESIS OF A PEPTOID FOR USE AS A NOVEL
THERAPEUTIC IN THE TREATMENT OF SICKLE-CELL DISEASE**

Michael Chiodo and Brian Brennan*

Chemistry Department, Illinois Wesleyan University

Sickle cell disease is a disorder of the body's red blood cells, characterized by their sickled shape. The cause of this disease is a single mutation in the protein hemoglobin, a molecule serving as the primary means of oxygen transport within the body. In hypoxic conditions, this mutant hemoglobin is capable of binding to other hemoglobin molecules leading to the formation of long polymeric strands and leaving the resultant red blood cell with a crescent shape. My research is focused on designing a molecule that can bind to the mutant hemoglobin and thereby disrupt the formation of polymeric strands and the subsequent misformation of the cell.

Poster Presentation P10

THE OLD MEN BOYS: MUSIC FOR THE FUN OF IT

Lycia Choi and Rebecca Gearhart*

Sociology and Anthropology Department, Illinois Wesleyan University

The Old Men Boys are a local band that plays a broad range of music spanning bluegrass and the blues. The band consists of four musicians who play a combination of banjo, harmonica, bass, fiddle, guitar, and percussion. They are a group of amateur musicians who get together every week to practice, but most importantly to enjoy each other's company and have a good time. Music brings the band's members together, starting with playing music in a tradition that is not 'mainstream,' and friendships that are strengthened by shared political and social beliefs sustains the band and keeps it going. Music is a definitive part of the lives of each and every member of the band, but is enjoyed specifically because they do not play at a professional level. Although they do perform in front of audiences, playing music is about having fun and being able to break away from the quotidian activities that structure their lives.

Poster Presentation P11

**QUEER IDENTITY: AWARENESS AND ADVOCACY OF THE LGBTQ COMMUNITY
THROUGH THE EFFORTS OF ILLINOIS WESLEYAN UNIVERSITY'S
PRIDE ALLIANCE**

Kacie Dieter and Rebecca Gearhart*

Sociology and Anthropology Department, Illinois Wesleyan University

Illinois Wesleyan University's Pride Alliance consists of a group of students that have discovered that their own identities do not quite fit within the bounds of the hetero-normative society in which we live. Pride Alliance is the LGBTQ support group on campus that welcomes gays, lesbians, bisexuals, transgendered people, and LGBTQ "allies" or anyone who is supportive of sexual minorities. The current members of Pride are self-identified queers and caring friends, with *queer* being a non-confining term that allows for uncertainty of and movement between gender identities and sexual orientations. This year, Pride Alliance has been especially active in educating the IWU campus about LGBTQ issues, and has been working to make important changes in the community: gaining support for same-sex marriage, attempting to change IWU's nondiscrimination policy to include the protection of gender identity. Including information gathered through the use of visual ethnographic methods, this poster provides insight into Pride Alliance, the identities of its members, and their efforts to increase awareness of the concerns of the LGBTQ community.

Poster Presentation P12

**WHY CAN'T WE BE FRIENDS?: THE EFFECTS OF DISCLOSURE AND SEVERITY
ON TYPICAL STUDENTS' ATTITUDES TOWARD PEERS WITH AUTISM
SPECTRUM DISORDERS**

Jacqueline Dowjotas and Linda Kunce*
Psychology Department, Illinois Wesleyan University

The autism spectrum disorders (ASDs) are characterized by deficits in social interaction, communication, and restrictive and repetitive behaviors and interests. Although many children with autism desire social interaction, they tend to have a difficult time mastering conversation skills and socially appropriate behavior. In addition, they have fewer and lower quality friendships when compared to typical peers, and they often face negative stigma from their typical peers. The current study was used to investigate typical students' attitudes toward hypothetical peers with varying degrees of ASDs. Participants (N = 61) read and responded to vignettes that depicted adolescents, in which severity of ASD symptoms and disclosure of autism were manipulated. There was a significant main effect for severity, such that as symptoms of the condition became more severe, peer attitudes decreased. There was also a significant interaction effect between severity and disclosure, suggesting that disclosure increased attitudes toward individuals with relatively moderate or severe conditions but had no apparent impact toward the individual with a mild condition. Overall, these findings suggest that middle school students are less accepting of children with more severe autism characteristics and that disclosing one's condition is beneficial, at least for persons with moderate or severe characteristics.

Poster Presentation P13

**LIFE ON THE WILD SIDE: AN INSIDE LOOK AT THE ZOOKEEPERS OF
MILLER PARK ZOO**

Noah Dunham and Rebecca Gearhart*

Sociology and Anthropology Department, Illinois Wesleyan University

This poster presentation seeks to demonstrate the theories and methods of visual anthropology applied to the zookeepers of Miller Park Zoo. Utilizing participant observation, formal interviews, and informal interaction, the ethnographer worked collaboratively with the zoo staff to create both text and images that define zookeepers as a unique sub-culture. The aim of the poster is to illustrate an emic perspective of zookeeping by focusing primarily on topics the consultants found most pertinent. These include: financial challenges associated with a zoo career, the balance of education and entertainment at the zoo, and the on-going process of animal enrichment. This research is unprecedented, as it provides the public with a unique inside perspective on zookeeping while functioning as a reflexive tool for the zookeepers to reflect on their work and share their experiences with others.

Poster Presentation P14

**ARE THE OPENNESS PERSONALITY TRAIT AND A SPECIFIC LEVEL
OF EXPERIENCE NECESSARY FOR CREATIVITY AMONG COLLEGE STUDENTS?**

Melanie Essayans and Jean Pretz*

Psychology Department, Illinois Wesleyan University

While previous research shows a consistently positive relationship between creativity and the Big Five Openness personality variable, researchers have been unable to find this consistency in college student samples. Here, Openness signifies an active imagination and intellectual curiosity with attentiveness to aesthetics and inner emotions, while creativity refers to the creation of an innovative and useful product. In the current study, we examined relationships among creativity, the Openness personality trait, and college class year in order to investigate the differences in college student creativity and Openness. One hundred seventy-two undergraduate students from Illinois Wesleyan University participated in a divergent thinking task and the International Personality Item Pool. While previous research would lead us to expect a steady increase in college student creativity, results confirmed that our student sample deviated from the expected relationships amongst the two variables, in that creativity did not follow any distinguishable pattern in relation to Openness or class year. However, results also suggested that we may need to consider the multi-faceted nature of the Openness personality trait and its affect on our findings. Suggestions for future research include analyzing creativity with respect to each individual facet of Openness, while implications include a better understanding of creative ability and its connection to college students and personality variables.

Poster Presentation P15

A SIMPLE APPARATUS FOR POTENTIOMETRIC TITRATIONS

Jennifer Faust and Rebecca Roesner*

Chemistry Department, Illinois Wesleyan University

A new, simple apparatus has been developed for high-precision potentiometric titrations to determine the protonation constants of azamacrocyclic ligands. The inexpensive set-up serves as an economical alternative to automatic titrators, which cost up to \$8000. The apparatus consists of a 250-mL jacketed reaction vessel clamped over a stir plate and connected to a chiller for temperature control. To prevent contamination of solutions by atmospheric carbon dioxide, the vessel is tightly sealed with a rubber stopper and maintained under a positive pressure of nitrogen. The rubber stopper contains three holes for the nitrogen inlet, the pH electrode, and titrant delivery. The titrant solution is stored under nitrogen during the titration and is added to the reaction vessel in small increments by micropipet. When the apparatus was utilized to standardize a KOH solution against potassium hydrogen phthalate, the relative standard deviation in the concentration was 2 %. Current investigations are underway to improve accuracy and precision.

Poster Presentation P17

DETERMINATION OF OPTIMAL CONDITIONS FOR *BCHF* ENZYMATIC ACTIVITY

Casey Hamm and David Bollivar*

Biology Department, Illinois Wesleyan University

Photosynthetic organisms possess the unique ability to capture solar energy and utilize it in the formation of carbon compounds from carbon dioxide and water. Without photosynthesis, all of Earth's organisms would be unable to acquire energy in a usable form. Because this energy conversion evolves oxygen, photosynthesis also sustains life by providing it with the atmospheric conditions needed to breathe. The first step in the photosynthetic process involves the absorption of light energy by pigments. While chlorophylls, found in higher plants and algae, are often the most familiar photosynthetic pigments, photosynthetic bacteria utilize a related pigment called bacteriochlorophyll. Study of bacteriochlorophyll and the mechanism of this pigment's biosynthesis can provide further insight into the crucial process of photosynthesis, as well as its evolutionary history. The previously-identified genetic locus *bchF* encodes an enzyme that catalyzes a certain step in the bacteriochlorophyll *a* biosynthesis pathway. Specifically, water is added to a vinyl group at position three of chlorophyllide *a* to form 3-hydroxyethylchlorophyllide. The steps of bacteriochlorophyll biosynthesis have been well-defined genetically, but the specific requirements for *bchF* enzymatic function have not been explored, such as its optimum pH and temperature. The study of *bchF* is significant because an *in-vitro* assay of this enzyme has never been produced; demonstrating that the enzyme is functional *in-vitro* would be an important step forward in understanding the biosynthesis of bacteriochlorophyll *a*. The first step, *bchF* gene amplification and transformation into *E. coli*, has been achieved. The ultimate objective is to characterize the optimal conditions for *bchF* enzymatic activity and to determine if the *bchF* gene alone is sufficient to catalyze this step in bacteriochlorophyll biosynthesis.

Poster Presentation P18

**PREDICTING LABOR FORCE PARTICIPATION BEHAVIORS
OF FEMALE IMMIGRANTS TO THE U.S.**

Alison Harford and Michael Seeborg*
Economics Department, Illinois Wesleyan University

After World War II, the United States witnessed the permanent entry of women into the workforce. Similarly, the U.S. labor force has been shaped by immigration. This paper uses data from the 2008 Current Population Survey and 2007 World Development Indicators to examine the labor force participation behaviors of female immigrants in the United States labor market. Labor force participation is predicted as the dependent variable of an OLS regression in order to determine whether the reservation wage effect or the actual wage effect is stronger in determining participation behavior of female immigrants. This paper presents the findings and sets a foundation for future research on this subject.

Poster Presentation P19

DO STUDENT NURSES USE INTUITION, AND DOES ITS USE AFFECT THEIR CLINICAL COMPETENCY?

Allison Heim and Jean Pretz*

Psychology Department, Illinois Wesleyan University

How do student nurses, who are novices in their field, use intuition to guide clinical decision making? This is an important question to examine as it relates directly to patient care and clinical outcomes. In this study, 27 junior undergraduate nursing students completed measures relating to preference for intuition in and out of nursing, thinking/feeling preference, rational/experiential preference, self-ratings of nursing competency, critical thinking skills, demographic information, and clinical experience outside of their coursework. Other information, such as Nursing exam scores, Nursing GPAs, and ACT/SAT scores were obtained upon consent. The students' clinical course instructors rated the students on their clinical competency and use of intuition in clinical situations. The results of the study indicate that when student nurses use intuition they are deemed more competent by their instructors. Intuition was significantly and positively correlated with faculty competency ratings. When a hierarchical regression was conducted to examine how intuition uniquely contributed to the outcomes, intuition accounted for 47.9% of the variation in the data. What this means is that novice nurses are capable of using their intuition successfully and with good outcomes. Implications of the study include changes to the current nursing view of the use of intuition by novices and better patient outcomes if novices trust their intuition to make clinical decisions.

Poster Presentation P20

COPPER(I) CATALYZED CLICK CHEMISTRY

Cory Kline and Rebecca Roesner*

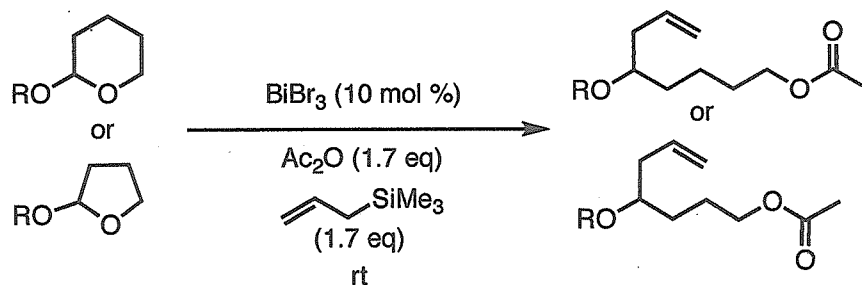
Chemistry Department, Illinois Wesleyan University

Several chemical reactions were performed to explore click chemistry based on the copper(I) catalyzed Huisgen 1,3-dipolar cycloaddition reaction between azides and alkynes. These reactions have been widely used in both medicinal and materials chemistry and have potential utility for the assembly of supramolecular systems based on macrocycles. Benzyl azide was prepared and new methods for its purification were explored. Benzyl azide and tripropargylamine were reacted to produce tris[(1-benzyl-1*H*-1,2,3-triazol-4-yl)methyl]amine (TBTA), a ligand that stabilizes the copper(I) catalyst that is commonly used in azide-alkyne cycloadditions. Reactions between benzyl azide and tripropargyl amine as well as reactions between benzyl azide and aromatic, primary or tertiary amines were attempted under a variety of reaction conditions. All products were analyzed by GC-MS and NMR spectroscopy.

Poster Presentation P21

BISMUTH BROMIDE CATALYZED ALLYLATION OF TETRAHYDROPYRANYL AND TETRAHYDROFURANYL ETHERS FOLLOWED BY *IN SITU* DERIVATIZATION TO GENERATE HIGHLY FUNCTIONALIZED ESTERS

Scott W. Krabbe, Harirajan Mani, Matthew J. Spafford, and Ram S. Mohan*
Chemistry Department, Illinois Wesleyan University



Tetrahydropyranyl and tetrahydrofuran ethers are common protecting groups for alcohols in organic synthesis but they can also be converted to other functional groups. A bismuth bromide catalyzed (10.0 mol%) multicomponent reaction involving the allylation of THP and THF-ethers followed by *in situ* derivatization with acetic anhydride to generate highly functionalized esters has been developed under solvent-free conditions. The allylation of THP and THF ethers has received little attention in the literature. The reported example utilizes the highly corrosive TiCl₄ in stoichiometric amounts. In contrast, the use of a relatively non-toxic and non-corrosive bismuth(III) based catalyst make this methodology especially benign and attractive. The results of this study will be presented.

Poster Presentation P22

**LANGUAGE STATUS OF NATIVE SPANISH-SPEAKERS IN BLOOMINGTON, IL:
A REPLICATION STUDY**

Margaret Kocher and Christina Isabelli*

Hispanic Studies Department, Illinois Wesleyan University

In larger cities throughout the United States, the increase of Hispanic communities has given rise to concerns of foreign language dominance. Immigrants and second generation Hispanics of Miami and New York have been questioned about their daily use of Spanish to determine language maintenance, which is the continual use of an inferior language in the environment of a different, dominant language. Younger generations are shown to use less and less Spanish in and out of the home, equaling language loss. The present study is a replication of Stone (1987) and measures to what extent Spanish is being maintained in Bloomington, Illinois. Ten members of the Hispanic community were interviewed concerning their daily use of Spanish and English. Spanish was shown to be the dominant language. The participants have a strong desire to learn English and a wish for their children to be bilingual. This study shows the current attitudes of first generation Spanish-speakers towards language retention plus positive attitudes towards learning English. Information concerning positive attitudes towards learning English is helpful in supporting the use of Spanish in regards to the English-Only debate.

Stone, G. (1987). Language choice among Mexican-American high-school students in Saint Paul, Minnesota: Some preliminary findings. *Language and Language Use: Studies in Spanish* (pp. 147-159). Lanham, MD: University Press of America.

Poster Presentation P23

HETEROLOGOUS EXPRESSION OF THE XANTHA-L SUBUNIT OF MG-PROTOPORPHYRIN IX MONOMETHYL ESTER CYCLASE FROM BARLEY

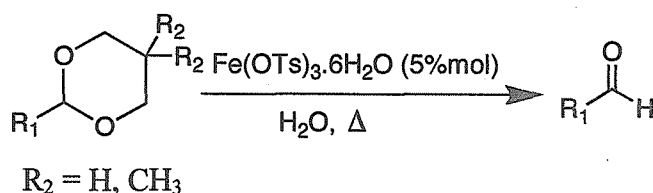
Katie Krempely and David Bollivar*
Biology Department, Illinois Wesleyan University

Chlorophyll *a* is central to life on this planet because of the central role it plays in the process of photosynthesis. Mg-protoporphyrin IX monomethyl ester (MPE) cyclase catalyzes a poorly understood reaction in chlorophyll *a* biosynthesis that is responsible for formation of the isocyclic ring. The isocyclic ring is a unique and necessary feature that exists in all chlorophyll molecules, including bacteriochlorophyll, primarily because addition of the isocyclic ring shifts absorbance of the chlorophyll into the red absorbance region. This shift in absorbance optimizes the pigment for absorption of light in the energy range of the absorption spectrum used for photosynthesis. The MPE cyclase enzyme is composed of at least three subunits: one soluble and two membrane-associated. This project focuses on one of the membrane-associated components of the cyclase, which is encoded by the Xantha-L locus in barley. Xan-L is a homolog of the *acsF* gene in the photosynthetic bacterium, *Rubrivivax gelatinosus*. The *acsF* locus has been shown to be required for aerobic cyclase function by gene knockout analysis in *R. gelatinosus*. In order to study the Xan-L subunit of the MPE cyclase, it is necessary to express the protein in a soluble form for use in enzyme assays. Previous experiments with heterologous expression of the Xan-L protein led to insoluble protein (Mats Hansson, Carlsberg Research Laboratory, personal communication). In an attempt to express the protein in a soluble form, the Xan-L coding region will be transferred to a set of special expression vectors meant to increase protein solubility when heterologously expressed in *E. coli*. However, moving the cloned Xan-L gene into the vector requires alteration of the sequence by site-directed mutagenesis. Once the mutation is created, the Xan-L gene will be placed into the Variflex plasmids. Once the clones in the Variflex vectors have been made, expression of the modified XanL protein will be performed to test whether the protein is soluble.

Poster Presentation P24

IRON TOSYLATE CATALYZED DEPROTECTION OF DIOXANES TO ALDEHYDES

Phillip R. Lazzara, Margaret E. Olsen, and Ram S. Mohan*
Chemistry Department, Illinois Wesleyan University



Cyclic acetals (dioxolanes and dioxanes), are useful protecting groups for aldehydes and ketones in the course of a total synthesis. Efforts have been made to develop mild and environmentally benign methods for the deprotection of cyclic acetals. Iron tosylate has shown to be an effective catalyst for the deprotection of aryl and aliphatic acetals. Iron compounds are attractive due to their low cost, ease of handling, and low toxicity. The results of this study will be presented.

Poster Presentation P25

CLEARANCE RATE VARIATIONS IN THE ROTIFER, *BRACHIONUS PLICATILIS*

Stephen Little and William Jaeckle*
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The Rotifera is a group of free-swimming, parthenogenic animals that feed through the use of cilia that create a fluid flow into the mouth. We studied the marine rotifer, *Brachionus plicatilis*, in order to determine rates of particle capture and fluid flow through its digestive system. Prior to each experiment rotifers were starved for several hours to clear their guts and then incubated in saltwater containing either 6 μm or 0.5 μm polystyrene beads (or both together). After a specified time, the rotifers were relaxed in carbonated water and preserved with 2.5% paraformaldehyde. The rotifers were mounted onto slides and the number of ingested beads were counted and used to calculate clearance rates. Clearance rate represents the volume of water cleared of that number of beads in a given amount of time. The rotifers were found to have a high variation of clearance rates. The average clearance rate of 6 μm beads for the 268 tested rotifers was $4.91 \pm 5.8 \mu\text{l/h}$. Clearance rate did not have a significant relationship with the length of the rotifer's body ($p > 0.05$; $n = 221$) or duration of feeding exposure ($p > 0.05$; $n = 1$). The average length of the rotifers studied was found to be $0.22 \pm 0.03 \text{ mm}$. It was also noted that there was no significant difference between separate vials when the experiment was performed at the same time. There was a significant difference ($p < 0.001$) between the clearance rates of 0.5 μm beads and 6 μm beads. The average clearance rate for 0.5 μm beads is $0.819 \pm 0.8 \mu\text{l/h}$, which is considerably smaller than that of 6 μm beads. This suggests that there is a different mechanism used to collect these different sized beads. The larger beads (6 μm) may be actively concentrated and cleared while the smaller beads (0.5 μm) might represent passive fluid flow through the digestive system.

Poster Presentation P26

**THE EXPRESSION AND FUNCTION OF TRPV1 AND TRPV3
IN THE HIPPOCAMPUS**

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Sensory neurons in the peripheral nervous system are responsible for sending sensory information from the periphery to the central nervous system. The Transient Receptor Potential Vanilloid (TRPV) family of genes encodes for different types of channels in the peripheral nervous system that respond to temperature, mechanical and chemical stimuli. Particularly, TRPV1 is expressed in sensory neurons and TRPV3 is expressed in keratinocytes (skin cells). But it is becoming apparent that the role of TRPV channels is much broader than just sensory transduction because they are proposed to be expressed in certain regions of the brain. The purpose of this study was to determine the expression and function of TRPV1 and TRPV3 in the hippocampus of the brain. In this study, using patch clamp electrophysiological techniques, I recorded membrane currents and membrane depolarizations leading to the generation of action potentials from cultured hippocampal neurons in response to application of 2-APB, a TRPV3 channel activator. I also used the calcium fluorescence imaging technique and found that application of 2-APB induced an increase in intracellular Ca^{2+} levels. However, application of capsaicin, a TRPV1 activator, neither induced a current nor increased intracellular Ca^{2+} levels in the same experimental conditions. From these results, I conclude that TRPV3 channels are present in the hippocampus, but not TRPV1 channels.

Poster Presentation P27

**ANTIBODY CORRELATES OF VACCINE INDUCED PROTECTION AGAINST
EBOLA VIRUS INFECTION IN NONHUMAN PRIMATES**

Sudil Mahendra and Nancy J. Sullivan*

Biology Department, Illinois Wesleyan University, and
The National Institutes of Health

The Ebola virus is a single-stranded RNA virus that causes Ebola hemorrhagic fever. A vaccine candidate for the Ebola virus was developed in the lab of Dr. Nancy J. Sullivan at the National Institutes of Health using the wild-type Ebola surface glycoprotein (GP). However, due to concerns with in vitro cytotoxicity, a point mutant (PM) version of the GP vaccine was created. However, the PM GP vaccine lost a correlate of survival in the process; the IgG concentration in the blood serum of immunized non-human primates was no longer correlated with survival. We hypothesized that antibody avidity, a qualitative property, correlates with survival when ELISA IgG titers do not discern meaningful differences. We tested this hypothesis by measuring the avidity in sera from vaccinated macaques with a modified ELISA that compares antibody binding in the presence of urea. The avidity values measured did not provide a significant correlate of survival.

Poster Presentation P28

**IS COMPETITIVE BEHAVIOR CONTROLLED BY ITS CONSEQUENCES?
THE EFFECTS OF OMISSION TRAINING ON COMPETITIVE BEHAVIOR IN RATS**

Melinda Mallory and James Dougan*
Psychology Department, Illinois Wesleyan University

Recent research has examined competitive behavior in rats. When multiple rats are placed in an open field with a single feeder delivering pellets on a Variable Time Schedule, the rats typically engage in a competitive wrestling response near the feeder tube. This response has been observed in several different experiments, but little is known about its specific nature. One possibility is that the response is a traditional operant. Although there is no explicit contingency with reinforcement, rats that do not engage in the response are unlikely to consume pellets. Alternatively, the competitive response might represent a species-specific foraging mode, controlled by the competitive foraging environment but not controlled by its consequences. The present experiments utilize an omission procedure, in which engaging in competitive responses cancels delivery of reinforcement. In experiment one there was no difference in the rate of competitive response during the omission phase when compared to a baseline phase. Although it would be tempting to conclude from these results that the behavior is not subject to its consequences, additional explanations must first be ruled out. The second experiment was aimed at eliminating any possible variables that may have affected these results in order to work toward elimination of any possible alternate explanation. The results have implications for various biologically-oriented models of foraging.

Poster Presentation P29

**MULTIDIMENSIONAL IMAGING OF BIOLOGICAL SUBSTRATES WITH
SCANNING ELECTROCHEMICAL MICROSCOPY**

Erica Woodall, Thomas Marlow and Melinda Baur*
Chemistry Department, Illinois Wesleyan University

Scanning Electrochemical Microscopy (SECM) is a useful tool for analysis of biological samples because it is capable of detecting both the topography of the cell surface as well as release of electrochemically active neurotransmitters. We wish to develop the SECM as a tool to study the effects of oxidative damage on neurotransmitter release in PC12 cells. To that end, experiments with the PC12 cells and the fabrication of the ultramicroelectrodes were conducted. Because the chamber of the SECM is not as humid as the incubator, the media that supports the cells evaporates quickly and concentrates cellular waste products, killing the cells. A method of replenishing cell media or slowing evaporation is required to monitor cells over long periods of time (days) within the SECM chamber. A layer of mineral oil was used to slow media evaporation. PC12 cell growth and viability was observed under this layer of mineral oil. Ultramicroelectrodes of various tip sizes and geometries were also fabricated to enhance the capability of the instrument for analysis of biological samples. A protocol to generate consistent tip beveling was developed. Ultramicroelectrode tips were observed using a Scanning Electron Microscope.

Poster Presentation P30

**CLONING AND TRANSFORMATION OF THE *BCHC* GENE FOR UNDERSTANDING
THE ACTIVITY OF BACTERIOCHLOROPHYLLIDE HYDATASE**

Yara Massinga and David Bollivar*
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The process of photosynthesis is critical to the maintenance of life on Earth. This process is the source of energy that is utilized by all biological systems. Central to the process of photosynthesis is the pigment chlorophyll in plants, and bacteriochlorophyll in photosynthetic bacteria. The experiments reported in this poster relate to understanding the process by which bacteria make bacteriochlorophyll. The *bchC* gene is a protein coding gene responsible for the bacteriochlorophyll biosynthetic pathway. It is thought to encode the enzyme bacteriochlorophyllide hydratase. This enzyme has never been assayed *in vitro*. The genomic DNA of *Rhodobacter sphaeroides* was isolated and used as a template for Polymerase Chain Reaction (PCR). The PCR reaction was successful, and the PCR product was cloned into the Topo Cloning vector and transformed into *E. coli*. The plasmid containing the *bchC* gene is being used to construct an expression strain of *E. coli* to make significant quantities of the enzyme. The ultimate goal of the project is to demonstrate *in vitro* activity for the first time and then characterize the bacteriochlorophyllide hydratase in detail.

Poster Presentation P31

DEMOCRACY IN THE FORMER SOVIET UNION: AN UPDATED ANALYSIS

Laura Maxwell and Michael Weis*

International Studies/Political Science Departments, Illinois Wesleyan University

Upon the dissolution of the Soviet Union in 1991, the region was flooded with scholars who were itching at the prospects of studying the outcomes of a transition from authoritarian rule with a centrally planned economy to democratic rule with free market capitalism. The initial forecast for democracy varied across the region, but it was presumed that the regimes formed were, in fact, on the road to democracy. However, through this initial survey, it was impossible to provide sure claims regarding the longevity of the institutions put in place shortly after transition, as well as the economic reforms that took place as a result of a transitioning democracy. This presentation puts forth a model that accounts for the social, economic and political factors that explain the current level of democratic consolidation of each of the nations in the Former Soviet Union. These factors will be accounted for at both the time of the transition towards democracy as well as through the policies enacted in the formative years of the regime which shaped the extent to which democracy has been consolidated in this region. In doing this, this presentation attempts to explain the variation seen between predicted levels of democracy at transition and the level of democracy in 2008. The findings of this study indicate that variation between the predicted levels of democracy and the actual levels of democracy today found in Russia, Belarus and Georgia can be accounted for by forces external to the institutional process of democracy-building. The variables that can make up this external force are ethnic conflict, border disputes, the presence of a resource curse and a strong cultural disposition towards authoritarianism.

Poster Presentation P32

**THE EFFECTS OF MEDIAL SEPTAL MODIFICATION ON THE
THETA RHYTHM OF THE AMYGDALA**

Colleen E. McShane and Joseph Williams*

Psychology Department, Illinois Wesleyan University

The theta rhythm is a 3-12 Hz electroencephalographic oscillatory phenomenon that has been recorded from the hippocampus of small animals during large motor movements, periods of arousal, and memory tasks. Theta denotes the amount of brain synchrony occurring, with higher theta amplitude corresponding to more synchrony. The proposed pacemaker of the hippocampal theta rhythm is the medial septal area (MSA), which consists of neurons that fire rhythmically in frequencies corresponding to the theta rhythm. Despite the proven physical connection between the MSA and the amygdala, there is uncertainty as to whether the MSA serves as a pacemaker for the amygdala theta rhythm as well. To assess the effect of MSA neuronal firing on the amygdala theta rhythm, cholinergic antagonists and GABAergic agonists were infused into the MSA. Eight male Long-Evans rats were anesthetized with a ketamine/xylazine mixture. A guide cannula was placed into the MSA and a recording electrode was placed into the amygdala. After one week, rats were re-anesthetized and attached to recording amplifiers. Baseline recordings were first taken for 5 minutes, and the rats were infused with one of a series of drugs: scopolamine (20 mg/ml or 40 mg/ml), muscimol (one or two doses of 0.5 μ l), ethanol (0.1% or 1.0%), saline, or a scopolamine/muscimol mixture. A within-subjects ANOVA was used to analyze pre- and post-infusion differences in theta power and frequency. Based on previous findings, it is expected that infusion of each drug except saline will result in a decrease in theta power and frequency.

Poster Presentation P33

THE SEARCH FOR LOCAL FOOD

Emily Meade and Carrie Trimble*

Business Administration Department, Illinois Wesleyan University

Buzzwords like “sustainable”, “locavore”, and “organic” have begun flooding the vocabularies of those talking about cooking and food over the past few years. But what does it mean to be a locavore? What is the difference in buying natural or organic foods? What benefits does one gain from eating locally? This presentation examines the quality and accessibility of information on locally grown food within twelve popular food and cooking websites. The websites were graded in three main informational categories: foods and ingredients, recipes, and growing seasons. Each category looked at the presence of specific information within the website and the ease of finding it. By researching these websites and their content, it was determined which sites were most useful in helping consumers find pertinent information about using local foods. This analysis also revealed areas of the topic that lack easily accessible or high quality information. These areas will now be part of the focus for www.BalancedChef.com, a website dedicated to expanding the information available to consumers looking to learn more about sustainable eating and using locally grown foods.

Poster Presentation P34

**CAMPAIGN FOR MALE BEAUTY: THE INFLUENCE OF
ADVERTISEMENT ON DIMENSIONS OF MALE BODY IMAGE**

Michelle Meehan and Natalie Smoak*
English Department, Illinois Wesleyan University

Distorted body image perception is a growing problem in today's society, with advertisements that display a "thin-ideal" having a significant effect on the issue. Recent advertising campaigns have been designed to improve self perceptions of body image and are now the focus of research. Dremonas (2008) concluded from her research of the Dove Campaign for Real Beauty, that such a campaign actually decreased self perceptions of body esteem in females. Adding to the research of Dremonas (2008), the present study utilized 50 male, undergraduate students to examine the effects of the Dove Campaign for Real Beauty on men. Participants either viewed the Dove commercial Evolution in its entirety, Evolution in part, or a control commercial. The men then completed self-report questionnaires to measure perceptions of their body and esteem. The results of the present study are pertinent because there is currently a discrepancy in findings regarding male body image. Researchers have found that males who view attractive men exhibit decreased body esteem, whereas men who view attractive women exhibit increased body esteem. As the problems associated with decreased body satisfaction continue to grow, it is important to more clearly differentiate between successful and harmful advertising techniques so as to better improve the pervasive media that affects esteem.

Poster Presentation P35

LANGUAGE ATTITUDES OF BLOOMINGTON-NORMAL ESL STUDENTS

Rachel Miller and Christina Isabelli*

Hispanic Studies Department, Illinois Wesleyan University

This is a study of twenty adult Mexican-American English as a second language (ESL) learners of the Bloomington-Normal, Illinois community. The purpose of this investigation is to examine the relationship between the ESL students' English proficiency and their attitudes toward the English language and US culture. Data was collected using a questionnaire and coincides with the findings of Oller, Baca, and Vigil (1977) that as ESL students become more proficient in English, they also appear to become less positive toward the English language and US culture. The results of this study can be used to analyze the role language attitudes play in the process of becoming fluent in a second language.

Oller, J., Baca, L., & Vigil, F. (1977). Attitudes and attained proficiency in ESL: A sociolinguistic study of Mexican Americans in the Southwest. *TESOL Quarterly*, 11(2), 173-183.

Poster Presentation P36

THE EFFECT OF INTRACAPSULAR MATERIAL ON RATE OF DEVELOPMENT AND JUVENILE SIZE IN FRESHWATER SNAIL PHYSELLA sp.

Vijeta Pamudurthy and William Jaeckle*
Biology Department, Illinois Wesleyan University

This study analyzed the relationship between egg capsule volume, development rates and size at hatching (juvenile shell size) of Physella sp. (Phylum Mollusca). Physella is a freshwater mollusc which lays egg capsules within a gelatinous egg mass. The size of the capsule might be proxy for available food since Physella has a direct development, and is born as a juvenile. So, all the nutrients it acquires for development must come from the intracapsular material. Therefore, I hypothesize that as the size of the capsule increases, there will be more intracapsular nutrients in the capsule, which might lead to a bigger juvenile being born. Difference in size of egg capsules might not have an effect on development rates of juveniles since the difference in the amounts of intracapsular material would not lead to a different development rate. In this study three egg masses from each of ten different snails were collected. When the egg masses were laid, the dimensions of each capsule within each mass were measured and the volume calculated. The volume of the juvenile was found at hatching by measuring its dimensions. Development rates were measured as the time for the following structures: eye, shell, heart, foot and tentacles to develop and hatching. We found a statistically significant and positive relationship between capsule volume and rate of development ($p=0.007$, $n=126$), but this was attributable to a single snail with an unusually rapid development rate. When this individual was removed from the data set, no significant relationship between capsule volume and rate of development was found. We found an overall significant relationship between egg capsule volume and juvenile volume ($p=0.039$, $n=126$), but we did not find a significant relationship for each of the offspring of individual snails. Also, there was no significant relationship between rate of development and size at hatching. As a result, we found that although larger amount of intracapsular material available would give rise to a juvenile of bigger volume, it does not develop at a different rate.

Poster Presentation P37

**SEXY (AND EDUCATIONAL!) PICTURES: A VISUAL ETHNOGRAPHY ON THE
EDUCATORS AT PLANNED PARENTHOOD OF ILLINOIS**

Lauren O'Connor and Rebecca Gearhart*

Sociology and Anthropology Department, Illinois Wesleyan University

Planned Parenthood Federation of America has been providing education and resources to women for over seventy years. While most of the news about Planned Parenthood is dominated by their pro-choice stance on abortion and other family-planning services offered at local clinics, this visual ethnography delves into the educational components of one such clinic, Planned Parenthood of Illinois (PPIL). Through interviews with the educational programming coordinator and several paid high school volunteers at PPIL, I discovered how important it is that women are not just treated, but also educated. Using presentations, personal contacts, and printed material, the educators at Planned Parenthood of Illinois struggle to provide comprehensive sexual education. Providing information about sexuality-related topics is not just a job to these educators; in the words of one highschool-age volunteer, "it is a lifestyle." The poster displays the resources and camaraderie essential to this lifestyle of sexual information-sharing, and portrays the commitment to each other and to privacy that the educators at Planned Parenthood of Illinois value in their crusade to provide answers and choices to their clients.

Poster Presentation P38

**EXAMINING DIFFERENCES IN CARBON DIOXIDE EMISSIONS
ACROSS COUNTRIES**

Karin Peterson and Robert Leekley*

Economics Department, Illinois Wesleyan University

Global climate change is a vital issue facing the planet today, posing significant risks both to humans and the natural environment. This dangerous phenomenon is largely caused by the release of carbon dioxide into the atmosphere, resulting from such activities as energy production and vehicle travel. This paper examines the factors leading to differences in carbon dioxide emissions among countries, beginning with an analysis of the influence of income on carbon dioxide production. A cross-sectional regression indicates that an inverted-U relationship exists between GDP per capita and carbon dioxide emissions, but that the turning point at which pollution begins to decrease occurs at a very high level of income not yet achieved by any country. The paper goes on to explore factors other than income that are likely to affect carbon dioxide emissions, including political openness, energy intensity, and coal consumption. It is found that these variables play a fairly significant role in determining emissions across countries.

Poster Presentation P39

**VAULT NAKED: AN ETHNOGRAPHIC REPRESENTATION OF ILLINOIS
WESLEYAN UNIVERSITY'S POLE VAULT CREW**

Amanda Pilgrim and Rebecca Gearhart*

Sociology and Anthropology Department, Illinois Wesleyan University

Using the visual media of photography and collaborative ethnographic research methods, this poster presentation aims to facilitate discussion about issues that are important to the Illinois Wesleyan University Track and Field Team's Pole Vault Crew. The ethnographer used visual media to document the Pole Vault Crew during the course of her participant-observation at practices, competitions, and during social interaction. After reviewing these images, it was concluded that the Pole Vault Crew share an identity based on the intensity of work and amount of time necessary for success within their chosen event. A common sentiment portrayed by the students through the poster presentation is of the importance of a positive mental attitude despite the inconsistencies of the sport.

Poster Presentation P40

BEHAVIORAL ECONOMICS IN RATS

Ross Pingolt and James Dougan*

Psychology Department, Illinois Wesleyan University

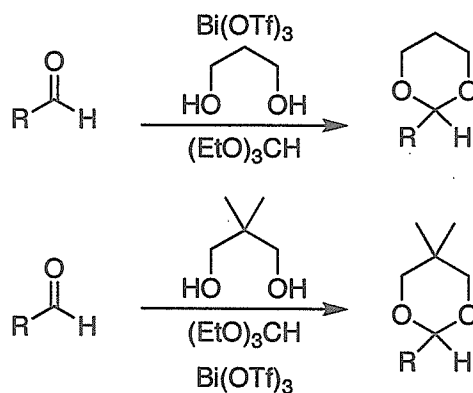
Risk aversion, or a tendency to prefer a more certain but smaller reward to a larger but less certain reward, even if the average payoff for the larger reward is higher, is a quality which most individuals, both human and animal, possess to different degrees. The purpose of this study is to examine how factors such as recent physical exertion and the expected value of the reward may affect the degree to which rats show risk aversion in their choice behavior. This will be studied by putting rats into a Y maze and allowing them to choose between a side which has a two-thirds chance of containing food pellets versus another side which has a one-third chance of containing twice as many food pellets, and observing whether or not their choices between the two sides are affected by having to run in a running wheel before making the choice or by changing the expected value of the reward.

Poster Presentation P41

**BISMUTH TRIFLATE CATALYZED SYNTHESIS OF
DIOXANES FROM ALDEHYDES**

Daniel M. Podgorski, Paul R. Sierszulski, Scott W. Krabbe, and Ram Mohan*
Chemistry Department, Illinois Wesleyan University

Due to the reactivity of aldehydes and ketones, it is often necessary to protect them in the course of a total synthesis. A commonly used protecting group is a dioxane (cyclic acetal), which is stable under basic conditions but readily cleaved under acid conditions. We have developed a mild and efficient bismuth triflate catalyzed synthesis of dioxanes. Bismuth compounds are attractive catalysts due to their low cost, low toxicity, and ease of handling. The results of this study will be presented.



Poster Presentation P42

**PERCEPTIONS OF BLACK FEMALE SEXUALITY IN
REALITY TELEVISION SHOWS**

Elizabeth Riggs and Kira Banks*

Psychology Department, Illinois Wesleyan University

Mass media plays a crucial role in socialization of racial stereotypes. One outlet of mass media, reality television, has become a popular alternative to scripted shows. As a recent phenomenon, the implication of racial stereotypes in reality television has yet to be studied. The current study examines how race influences people's perception when different racial groups are shown in similar contexts. In addition, it explored if an integrated friends circle and awareness of structural inequalities affects perceptions. Participants (N=64) were asked to rate the portrayals of Black and White women on two popular reality dating shows, *Rock of Love* and *Flavor of Love*. Ratings did not differ significantly on how realistic the portrayals of the women were on each show, but participants believed the women on *Flavor of Love* were portrayed more stereotypically than the women on *Rock of Love*. Interestingly, we found that when asked about stereotypical traits of Black women (i.e. these women are hypersexual, could not stay monogamous and use sexual appeal to get ahead) participants were more likely to agree that the White women endorsed these traits significantly more often than the Black women. While counter to our hypotheses, we suggest that these results might be indicative of the fact that since participants acknowledged that the Black women were depicted stereotypically, they may still covertly believe the behavior as realistic. Whereas, the White women's behavior was incongruent to expectations of White women, and as a result, participants were more likely to notice the behavior and rate them more harshly than the Black women, whose behavior would be seen as predictable. The current study offers a unique insight to begin understanding the influence of racial stereotypes when similar behaviors are viewed in different racial groups.

Poster Presentation P43

TRI-SHARK TRIATHLON CLUB: A GLIMPSE INTO THE LIVES OF IRONMEN

Kirsten Pufahl and Rebecca Gearhart*

Sociology and Anthropology Department, Illinois Wesleyan University

Utilizing Visual Anthropology as a research method enabled the production of this poster presentation, as it aims to show who Ironmen truly are. Data collection included collaborative ethnographic research methods focusing on the use of photographs in gathering information. By providing insight into these athletes' everyday lives and routines along with the difficulties of their sport, many of the myths associated with the sport were dispelled. The group of Ironmen under study concluded that they experience a family-type bond with each other, coming together through their passion for living an active life. The group provides a strong, stable support system as each individual faces challenges and obstacles in the training regime. Each athlete elaborated upon a set of issues that characterize the life of an Ironman: the time commitment necessary for training, the challenges of training in inclement weather, and the expenses incurred because of the sport.

Poster Presentation P44

**HISPANICS IN CHICAGO AND DUPAGE COUNTY, IL: EFFECTS OF INCOME ON
THE MAINTENANCE OF THE SPANISH LANGUAGE**

Thure Ross and Christina Isabelli*

Hispanic Studies Department, Illinois Wesleyan University

There is a difference in the income of the Hispanic population and the general population in the city of Chicago and DuPage County, Illinois. This study is an investigation of income variation and its effects on Spanish maintenance in the future. Census data was used to determine a relationship between the level of income and level of English-speaking ability in the Hispanic population. The results show that there is a relationship between low-levels of income and low-levels of English-speaking ability. This discrepancy will result in less maintenance of Spanish in the future and an eventual shift to English. These results contradict fears of proponents of the English-Only Movement that Spanish will cause monolingual English-speakers to be at a disadvantage if they do not learn Spanish.

Poster Presentation P45

**RESPONSE OF ANAPLASTIC THYROID TUMORS TO VEGF-TRAP,
AN ANTI-ANGIOGENIC AGENT**

Isabella Rossi and Fiemu Nwariaku*

Biology Department, Illinois Wesleyan University and
University of Texas Southwestern Medical Center

Vascular Endothelial Growth Factor (VEGF) is the major proangiogenic factor secreted by tumor cells. VEGF causes endothelial cell proliferation, migration, and survival, leading to the formation of new blood vessels that are essential for tumor growth and metastases. Anti-VEGF therapy involving an anti-VEGF monoclonal antibody has been successfully used to treat a variety of cancers. However, this approach has met with mixed results. A recently developed antibody, VEGF-Trap, was developed to improve the efficacy of anti-VEGF strategies. VEGF-Trap is a synthetic protein composed of the VEGF-binding domains VEGF Receptor 1 (VEGFR1) and VEGFR2, resulting in a higher binding affinity for VEGF than the monoclonal antibody. This study determined the effect of VEGF-Trap in anaplastic thyroid carcinoma, an aggressive form of cancer with high mortality and metastases rates. Mice bearing anaplastic tumors showed improved survival when treated with VEGF-Trap. The size of the tumors, in addition to the microvessel density, significantly decreased. Additionally, the results indicated compensatory VEGF production as well as an increase in macrophage density. Overall, the study showed anaplastic thyroid cancer to be susceptible to treatment with VEGF-Trap. Potential resistance of tumor blood vessels to anti-VEGF therapy is hypothesized to be conferred by pericytes, which provide survival signals for blood vessels. Therefore, a dual targeting of both endothelial cells and pericytes by combining VEGF-trap with an anti-PDGF therapy may prove to be a more efficient anti-angiogenic therapy for anaplastic thyroid cancer.

Poster Presentation P46

**MAKING OTHERS FEEL GOOD: TARGETED SOCIAL SKILLS ACTIVITIES USING
SOCIAL STORIES FOR TEENS/ADULTS WITH AUTISM SPECTRUM DISORDERS**

Mary Roznovsky and Linda Kunce*

Psychology Department, Illinois Wesleyan University

Deficits in social skills and, more specifically, reciprocal social interaction are common difficulties among adolescents and adults diagnosed on the autism spectrum. Social stories, small vignettes explaining how and why people act in certain ways, and behavioral rehearsal, are common educational tools used to facilitate reciprocal social interaction in people with autism. This exploratory research project investigated ways to increase reciprocal social interaction among high functioning adolescents/adults with autism through the use of social stories and behavioral rehearsal. Quantitative and qualitative data were collected to assess participants' evaluation of the social skill/behavioral rehearsal activities, the importance of social skills, perception of improvement after practicing a skill, and perception of how someone feels when the skill is directed towards him/her.

Poster Presentation P47

LEADERSHIP IN THE WORKPLACE

Elizabeth Rupprecht and Natalie Smoak*

Psychology Department, Illinois Wesleyan University

The strong influence of leaders on the effectiveness and success of their business is strongly supported by past events and research. The connection between subordinates and their leaders is very salient since their interaction creates a positive or negative workplace environment. The relationship between specific characteristics of the subordinate and how that influences their choice of ideal leader was studied; subordinates were predicted to share similar traits with their ideal leader. Ideal leadership behaviors were measured using the MLQ, including two major leadership styles: transformational and transactional. Participants were faculty and staff of IWU. One hypothesis was supported by the data: Individuals who are strongly committed to their organization prefer a transformational leader. All other hypotheses were not supported by the data. The conclusion proposed is that similarity between individual and ideal leader characteristics may not be as strong a factor in the choice of a leader as relying on past experience or another factor.

Poster Presentation P48

ASSEMBLY OF NIOBIUM POLYOXOMETALATES AND AZAMACROCYCLES

Christopher J. Santee and Rebecca Roesner*
Chemistry Department, Illinois Wesleyan University

Dr. Roesner's research group has been investigating interactions between azamacrocycles and polyoxometalates with the long-term goal of using polyoxometallates to direct the assembly of those macrocycles into supramolecular species. Initially, the group focused on Keggin polyoxoanions (e.g. $\text{PW}_{12}\text{O}_{40}^{3-}$, $\text{SiW}_{12}\text{O}_{40}^{4-}$), which are stable only in acidic solution. The azamacrocycles are partially or fully protonated over this pH range and the resulting polyoxoanion/macrocycle adducts exhibit properties consistent with their strong ionic bonding. Most of the salts composed of macrocyclic cations and polyoxoanions are poorly soluble in both water and polar organic solvents. In an effort to develop more-soluble polyoxoanion/adducts, the hexaniobate ion, $\text{Nb}_6\text{O}_{19}^{3-}$, was synthesized. This niobium polyoxometallate is stable at high pH and can therefore coexist in solution with neutral (free base) azamacrocycles. To date, no host guest complexes between the hexaniobate ion and free base azamacrocycles have been isolated.

Poster Presentation P49

**THE EFFECT OF PREDOMINANT LIGHT ON COLORATION IN THE CHINESE
PRAYING MANTID *TENODERA ARIDIFOLIA SINENSIS***

Lukasz Sewera and Elizabeth Balser*
Bioogy Department, Illinois Wesleyan University

Tenodera aridifolia sinensis, also known as the Chinese praying mantid, is an introduced species in North America. With no major predators, this insect has thrived and successfully incorporated itself into ecosystems throughout the Midwestern and Eastern United States. Juveniles of *T. aridifolia sinensis* are easy to rear in laboratory settings, making it an ideal insect for experimentation. Specimens of *T. aridifolia sinensis* have three predominant morphological patterns with respect to exoskeleton coloration; they are green, brown, or a mixture of the two. As such, these insects are usually found in habitats similar to their color (i.e., green mantids are found on leaves, brown ones on bark) (Prete 1999). In this study, we sought to determine whether mantid exoskeleton color is influenced by the predominating color of light in which they live. Approximately 100 nymphs of *T. aridifolia sinensis* were reared from birth, isolated in chambers with colored light (red, blue, green, and clear). All other environmental factors were standardized. Color was quantitatively assessed using a spectrophotometer to determine the concentration of the pigment Biliverdin IXa in each specimen. Biliverdin IXa is responsible for the green coloration in praying mantids (Rudiger 1968). Differences in color could be due to varying concentrations of this pigment resulting from the effect of predominant light.

Poster Presentation P50

PAX9* GENE EXPRESSION IN *MOENKHAUSIA SANCTAEFILOMENAE

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The *Pax* family of genes function as transcription factors, playing an essential role during development, such as migration of neural crest and differentiation of tissues (Lang et al, 2006). *Pax9* is a part of the *Pax* family and is critical in embryonic development in vertebrates, specifically in the cartilages and bones of the vertebrae and craniofacial skeleton (Peters et al, 2008). Our research investigates the expression of *Pax9* in the red-eye tetra, *Moenkhausia sanctaefilomenae*. *Pax9* was first amplified via reverse transcriptase – polymerase chain reaction and subsequently cloned. *Pax9* was then developed into a probe for in situ hybridization in order to view gene expression. Our results have shown that *Pax9* is expressed in the pharyngeal arches, trunk sclerotome, and tail in different development stages of the tetra. Studying expression of the *Pax9* gene provides insight to the specific embryonic development of tetras and allows for further studies such as a detailed, comparative analysis of the skeletogenic genes involved in fish development.

Poster Presentation P51

AN ENEMY OF THE PEOPLE DRAMATURGICAL RESEARCH

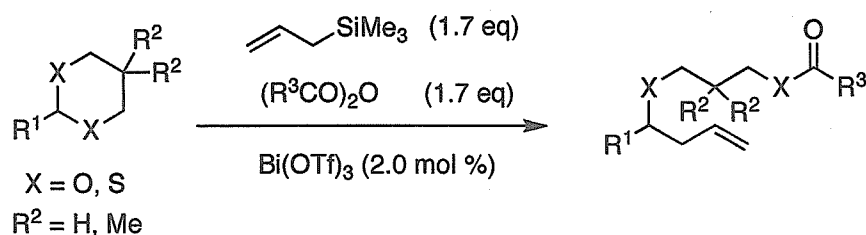
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An Enemy of the People by Henrik Ibsen, Norwegian playwright, was adapted for the American stage by Arthur Miller in 1950. For Illinois Wesleyan's School of Theatre Arts production this spring from February 17-23, I completed the historical research for the director, designers, and cast of this production. The information I discovered about the nature of Norway's government, the historical context under which Ibsen wrote, and the contemporary philosophy was distilled into three "briefs" and two display boards for the lobby. The briefs were studied by the cast and discussed during the initial rehearsal phase. The display boards in the lobby were read by the audience during performances in order to supplement their perception of the production.

Poster Presentation P52

**BISMUTH TRIFLATE CATALYZED ALLYLATION OF DIOXANES AND
DITHIANES FOLLOWED BY *IN SITU* DERIVATIZATION TO
GENERATE HIGHLY FUNCTIONALIZED ESTERS**

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Cyclic acetals (dioxanes and dithianes) are useful protecting groups in organic synthesis but they can also be converted to other useful functional groups. A bismuth triflate catalyzed multicomponent reaction involving the allylation of dioxanes and dithianes followed by *in situ* derivatization with anhydrides to generate highly functionalized esters and thioesters has been developed under solvent-free conditions. The Lewis acid catalyzed allylation of cyclic acetals has received minimal attention in the literature. Most reagents used to date for allylation of cyclic acetals are highly corrosive or toxic and often required in stoichiometric amounts. In contrast, the use of a relatively non-toxic and non-corrosive bismuth(III) based catalyst makes this methodology especially benign and attractive. The results of this study will be presented.

Poster Presentation P53

**THE DEVELOPMENT OF A NOVEL THERAPEUTIC FOR THE
TREATMENT OF SICKLE CELL DISEASE**

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Sickle Cell Disease is a genetic disorder caused by a single point mutation that affects the hemoglobin of red blood cells. This mutation allows the protein to interact with other molecules of hemoglobin, forming aggregates that take on a gel like consistency within the cells. The protein aggregation deforms the cell, changing it from a normal biconcave disc form to a 'sickled' shape, leading to improper flow through capillaries. Despite the fact that the molecular mechanism for the illness has been known in detail since 1957, no truly effective treatment has yet been discovered. As a novel approach for the treatment of this ailment, we have taken advantage of a peptide screen in order to discover ligands that can bind to the protein surface and disrupt the protein-protein interactions responsible for aggregation. Our initial library is based on the natural peptide sequence of the mutation binding site.

Poster Presentation P54

**LENGTH OF CONTRACTS AND THE EFFECT ON THE PERFORMANCE
OF MLB PLAYERS**

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The goal of any professional athlete is to receive a multi-year contract that guarantees them a salary for multiple years. However, a concern that fans, coaches and owners all share is that when a player receives a multi-year contract they may have a strong incentive to shirk. Shirking is when a player purposely does not perform to the best of his ability and may occur when a player has a guaranteed salary. The goal of this paper is to determine if a Major League Baseball player with a multi-year contract will show any pattern of shirking throughout the contract. Each of the fifty players has a four year contract and the theories of moral hazard and asymmetric information suggest that a player may shirk during the contract until the last year. Descriptive statistics and OLS regression results provide evidence that Major League Baseball players with four year contracts do not have a pattern of shirking. Job security, above market wages and monitoring may be the important concepts explaining why there is no evidence for shirking.

Poster Presentation P55

**ROLL WITH IT: EXPLORING PEN AND PAPER ROLE-PLAYING GAMES AS
COLLABORATIVE AND EXPERIMENTAL FICTION THROUGH VISUAL
ANTHROPOLOGICAL METHODS**

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Using the visual media of photography and collaborative ethnographic research methods, this poster presentation aims to facilitate discussion about the collective and experimental fiction elements of Pen and Paper Role-Players at IWU. By examining the photographs taken by the ethnographer's participant-observation of weekly gatherings, the Pen and Paper Role-Players have concluded that the continued success of their activity is based on their group effort to create a great story. The research highlights the cooperative elements of story-building in addition to the significant portion of story line that is left to chance, which lends a level of realism and unpredictability to the process.

Poster Presentation P56

**DOES PERFECTING YOUR DAY KEEP THE DOCTOR AWAY?:
EXAMINING THE ROLES OF AFFECT AND COPING IN THE ASSOCIATION
BETWEEN PERFECTIONISM AND PHYSICAL HEALTH**

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Psychology Department, Illinois Wesleyan University

This study tested a structural model in which the association between perfectionism and physical health is mediated by positive and negative affect and coping strategies. A sample of 119 Illinois Wesleyan undergraduate students completed two questionnaires that assess perfectionism as a multidimensional construct, the Multidimensional Perfectionism Scale (MPS-H; Hewitt & Flett, 1991) and the Frost Multidimensional Perfectionism Scale (FMPS; Frost, Marten, Lahart, & Rosenblate, 1991), as well as questionnaires that assess positive and negative affect, coping strategies, physical health, and preventative and risky health behaviors. Predicted results would support a structural model in which adaptive perfectionism is related to higher levels of positive affect and more adaptive coping strategies, which in turn are related to better physical health, including the performance of more preventative health behaviors and fewer health risk behaviors. Alternatively, maladaptive perfectionism would be associated with higher levels of negative affect and maladaptive coping strategies that in turn would predict poorer physical health, including the performance of fewer preventative health behaviors and more health risk behaviors. These results would have implications for improving the immediate and long-term health of persons high in maladaptive perfectionism by prompting interventions to focus on increasing positive affect, decreasing negative affect, and improving coping strategies.

Poster Presentation P57

ANIME; AN ILLINOIS WESLEYAN CULTURE CLUB

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Using visual ethnography, this poster presentation is a means to educate people about the unique characteristics of the IWU Anime Club. This research focuses on how Anime unites Club members through activities that allow them to bond with each other as well as express their individuality. One of these activities is *Cosplay* or “costume play,” in which participants outfit themselves in costumes and accessories worn by specific anime characters. As anime becomes more integrated into mainstream American culture, Anime Club members share their enjoyment of anime through *Cosplay* events as well as bi-monthly anime film screenings that are open to the entire IWU student body. New members are always welcome to join in. The research highlights how members of the IWU Anime Club express a unique sense of self-identity through a specific type of media that they enjoy.

Poster Presentation P58

RETURNING CAPITAL AND AGENCY COSTS IN BANK OWNERSHIP AND MANAGEMENT STRUCTURE

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Business Administration Department, Illinois Wesleyan University

This paper attempts to add to existing research on corporate payout by focusing on the role that the principal-agent problem, which is inherent between managers and owners, plays on dividend policies of companies, while controlling for factors that have been previously shown to influence corporate payout. While owners desire to have the greatest return on their contributed capital, managers often have incentive to grow the firm beyond its optimal size. Therefore, in order to minimize the agency problems with managers, owners usually demand for capital to be returned when they see a buildup in cash from retained earnings.

In order to test the principal-agency problem, my paper will focus on the banking sector because both private and public banks have to file publicly viewable call reports with the Federal Reserve Banks. Therefore, the difference between public and private banks decisions to return capital to owners can be tested using ordinary least squares regressive analysis. The main difference between public and private banks is their ownership structure. While public banks tend to have many shareholders who are disconnected from management, private banks generally have fewer owners who tend to be more actively engaged in managing or overseeing the banks management. Therefore, we would expect public owners to have a higher cost in monitoring the decisions of management and would demand banks to return more of their earnings. As expected, this study lends evidence that private banks have a different cost curve when it comes to retaining earnings and will be more willing to let retained earnings build up without returning them to owners in the form of dividends or stock repurchases.

Poster Presentation P59

INDIAN CLASSICAL DANCE: THE TRADITION OF HERITAGE

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Indian Classical Dance teaches Indian cultural traditions and passes down important aspects of Hindu philosophy from one generation to the next. Uma Vyjayanthimala Kallakuri, who bears the “Singarmani” title of distinction, teaches Indian Classical Dance to members of the Indian immigrant community here in Bloomington-Normal. Through participant-observation and collaboration with Dr. Kallakuri and her students, this poster displays how Uma teaches the hand gestures, eye movements, and body positions that dancers use to tell the myths, legends, and fables that communicate important moral lessons and Indian values. Through Sanskrit texts, Indian classical music, and sacred movements of devotion, Uma transmits Indian culture to Indians and non-Indians alike, through their participation as students and audience members.

Poster Presentation P60

**NOVEL THERAPEUTICS IN THE TREATMENT OF SICKLE CELL DISEASE:
EXPRESSION AND PURIFICATION OF HEMOGLOBIN AND
SICKLE CELL HEMOGLOBIN**

Susan Zhong and Brian Brennan*
Chemistry Department, Illinois Wesleyan University

Sickle cell disease is an inherited blood disorder characterized by sickle shaped red blood cells. The abnormal shape of the red blood cells stems from a mutation in the gene coding for hemoglobin causing hemoglobin to aggregate under deoxygenated conditions. Sickled red blood cells have a short life span and their shape clogs blood vessels and capillaries which bring about the symptoms of sickle cell disease. Sickle cell disease effects people world wide, but especially in Africa where one in 500 people are born with the illness. Currently, there is no universal treatment for Sickle cell. This research is to discover a way to alleviate the symptoms of sickle cell disease by inhibiting hemoglobin aggregation. In order to study hemoglobin, we must develop a system to express and purify hemoglobin (Hb) and sickle cell hemoglobin (HbS) in high yields. In this study, Hb and Hbs are expressed in E. coli bacteria and them column purified.