

Creighton University  
College of Arts and Sciences

# 10<sup>th</sup> Annual Honors Day

*Program of Research Presentations*



Wednesday, April 23th, 2014

2:00-5:00 PM

Harper Center, 3rd Floor



# Table of Contents

## *Introductions*

Welcome from the Dean	1
Welcome from the Director	2

## *Schedules*

Oral Presentation Schedule	3
Poster Presentation Schedule	5
Schedule of Speakers	9

<i>Abstracts</i>	10
------------------	----

## *About the Program*

Mission Statement	34
Program Administrators	35
Executive Board Members	36
Student Board Members	37

# Welcome from the Dean

Welcome to Honors Day, 2014.

Today we recognize the innovation, creativity, and dedication of Creighton's College of Arts and Sciences Honors students. We celebrate the range of their academic accomplishments. These presentations, posters, and artwork demonstrate the very best of what exceptional undergraduates can produce when provided with the combination of freedom of inquiry, disciplinary focus, and mentorship from faculty, all of which are key features of Creighton University's Honors Program. What you see displayed here in the Honors students' projects is a culmination of intellectual curiosity, diligent research, and steadfast commitment to creating new knowledge. I hope you will join me in congratulating the students and their mentors. We are proud of your contributions to Creighton and to your fields. We honor you.

Congratulations, Honors Day 2014 presenters!

**Dr. Bridget Keegan, Ph.D.**

Professor of English and Interim Dean,  
College of Arts and Sciences

# Welcome from the Director

Dear Honors Researchers,

Today, as we do every year, we gather to celebrate Honors research projects. These projects represent disciplines across our curriculum, treating such diverse topics as cubism, post-traumatic stress disorder, Ewing's Sarcoma, and Omaha's Bhutanese refugees. Like all the best research, your work contributes not only to our understanding of the world, but likewise to our admiration and wonder.

The ambitious projects you are presenting today were born not just of your intellectual powers, but of your diligence, patience, courage, and steadfastness. It was hope that inspired you, resolve that carried you through, and conscientiousness that led to completion. Not only your projects, but you yourselves serve as models for the Creighton community to follow. Therefore, we gather to celebrate not just Honors research, but Honors researchers. Congratulations on your hard-won accomplishments.

**Dr. Jeffrey Hause, Ph.D.**

Honors Program Director

# Oral Presentation Schedule

Time:	Room:	Presenter:	Title:
2:05 p.m.	3027	Elycia Kazemian	“Phylogenetic Analysis of Acetylcholine Receptors”
2:05 p.m.	3029	Taylor Thompson	“A New Urban Ecology: A Case Study on Lake Olathe”
2:05 p.m.	3029A	Rebecca Moynihan	“Modeling Educational Success”
2:30 p.m.	3027	Angela O’Brien	“Studying Abroad and Personal Identity: A Case Study”
2:30 p.m.	3029	Annemarie Weiner	“How Did I Get Here? A ‘Graphic’ Journey”
2:30 p.m.	3029A	Damian Daszynski	“Optimization of Solid-Phase Micro-Extraction/ Gas Chromatography- Mass Spectrometry (SPME/GC-MS): Strategies for Monitoring the Decomposition of Red Wines”
2:55 p.m.	3027	Jason Rogers	“Policy, Prejudice, and Protest: A New Look into the History of the 477th Bombardment Group”

# Oral Presentation Schedule

Time:	Room:	Presenter:	Title:
2:55 p.m.	3029	Sarah Qasmi	“What to Expect When You are Expecting: Perceptions and Preferences of Prenatal Care Among Bhutanese Refugees in Omaha”
2:55 p.m.	3029A	Michael Conroy	“Tartuffe Unmasked: An Actor’s Interpretation of Moliere’s Famous Hypocrite”
3:20 p.m.	3027	Henry Bass	“An Interdisciplinary Examination of Self-Deception”
3:20 p.m.	3029	Nina Fredericks	“Nude Layer Drawings: A Cubist Approach”
3:20 p.m.	3029A	Jelena Pjević	“Sift Out: A Collection of Poems”
4:00 p.m.	3027	Anne Mirich	“The Simple Hydrocarbon, CH <sub>4</sub> , and High Temperature Hydrogen Exchange”
4:00 p.m.	3029A	Daniel Renfro	“Looks Good on Paper: Male Depictions in Advertising”

# Poster Presentation Schedule

Time:	Room:	Presenter:	Title:
2:05 p.m.	3028	Kaitie Dougherty	“Effects of Adolescent Nicotine Exposure on Amphetamine Self-Administration and the Ability of Environmental Enrichment to Alter the Nicotine Effects”
2:05 p.m.	3028	Gina Gilson	“Mapping the Mud: Remotely Quantifying Variability in Algal Densities”
2:05 p.m.	3028	Connor Griggs	“Synthesis of N-Methyl-L- $\beta$ -hydroxyvaline Using the Schöllkopf Chiral Auxiliary”
2:05 p.m.	3028	Evan Holland	“An Examination of the Causes of Income Inequality”
2:05 p.m.	3028	Lauren Mason	“Effects of Mental and Physical Comorbidity on Observer Stigma Appraisal”
2:05 p.m.	3028	Dilasha Neupane	“Blackfly Research”
2:05 p.m.	3028	Katherine Osterman	“Exposing Nano-scale Inversion Domains in N-polar Aluminum Nitride by Potassium Hydroxide Etching”

# Poster Presentation Schedule

Time:	Room:	Presenter:	Title:
3:15 p.m.	3028	Jeannie Ngo	“Evaluation of Ceramic Filter Elements for Use in Personal Water Filters”
3:15 p.m.	3028	Kate Pitz	“Organic Dust, Lipopolysaccharide, and Peptidoglycan Modulate Osteoclastogenesis”
3:15 p.m.	3028	John Sarmiento	“The Filipino Nurse Experience at Home and at Work: A Theoretical Explanation”
3:15 p.m.	3028	Mary Wade	“The Affect of Joint Innovation on Patent Quality”
3:45 p.m.	3023B	Bernadette Clement	“Differential Gene Expression of E2f3, FAM213a, Nqo2, GLP1R, Oxytocin, and Rgcc in the Mouse Amygdala”
3:45 p.m.	3023B	Emma Hoppe	“Elucidating the Expansion of the Tissue Inhibitors of Metalloproteinase (TIMP) Multigene Family During Eukaryotic Evolution”

# Poster Presentation Schedule

Time:	Room:	Presenter:	Title:
3:45 p.m.	3023B	Lexi Kaneshiro	“Butterflies as Pollinators or Nectar Thieves: Studies of Flower Faithfulness in Prairie Butterflies”
3:45 p.m.	3023B	Timothy McDermott	“Working Memory Deficits in Veterans with Combat Related PTSD : A Magnetoencephalography Study”
3:45 p.m.	3023B	Sruti Prathivadhi	“High Precision Michelson Interferometry: A Low-cost Laser Wavemeter”
3:45 p.m.	3023B	Anthony Schilling	“An Examination of Hedge Fund Performance”
3:45 p.m.	3023B	Mary Beth Schroeder	“Assessment of Cognitive Impairment Caused by Cancer Treatment”
3:45 p.m.	3023B	Vianney Truong	“Icaridin, a Better Insect Repellant?”

# Poster Presentation Schedule

Time:	Room:	Presenter:	Title:
2:05 p.m.	3028	Erin Triplet	“Amyloid Precursor-Like Protein 2 Expression in Irradiated Ewing’s Sarcoma”
3:15 p.m.	3028	Mariah Borek	“What Explains the Variation in FDI?”
3:15 p.m.	3028	Adam Cohen	“The Quantification of Phospholipids Present in Fetal Bovine Serum and Serum-Free Growth Mediums Using Gas Chromatography”
3:15 p.m.	3028	Brian Farrell	“Structural Characterization of a Mammalian Riboswitch in the Spermine Biosynthetic Pathway”
3:15 p.m.	3028	Gloria Larson	“Pseudomonas syringae Triggered Reduction of Host Histone H3-K9 Acetylation in Arabidopsis Is Type III Effector Driven and May Involve Histone Deacetylase HDA5”

# Schedule of Speakers

Welcome and Introduction:

Dr. Lydia Cooper, Assistant Director of the Honors Program

Welcome from the Dean:

Dr. Bridget Keegan, Interim Dean of the College of Arts and Sciences

Congratulations from the Office of the Provost:

Dr. Edward O'Connor, Provost of Creighton University

Congratulations from the President:

Father Timothy R. Lannon, S.J.

Closing remarks:

Dr. Jeffrey Hause, Director of the Honors Program

# Abstracts

## **Henry Bass**

Majors: Psychology and Philosophy

Faculty Sponsors: Dr. Gary Leak and Mr. Chris Pliatska

3:20-3:40 p.m. // Harper 3027

### “An Interdisciplinary Examination of Self-Deception”

Self-deception is an interrelated topic that has been discussed fairly in-depth within the fields of psychology and philosophy. However, while those studies have been relatively thorough and intricate, both lack in a degree of clarity that could be amended by unifying the two perspectives. Through the examination of how self-deception has been studied in both fields, this paper aims to provide a more complete analysis of those topics in order to create a better understanding of them, while at the same time demonstrating how philosophy and psychology can benefit each other as a whole.

## **Mariah Borek**

Majors: Political Science and Economics

Faculty Sponsor: Dr. Erika Kirby

3:15-4:05 p.m. // Harper 3028

### “What Explains the Variation in FDI?”

Foreign direct investment, FDI, has become an important part of many countries' economies. While some countries receive enormous amounts of FDI, other countries struggle to receive any of this now vital source of finance. What causes this variation in FDI is an important question to answer for countries looking to receive more FDI and for investors looking to safe guard their money. In my research I tested and showed that central bank independence, CBI, is an important factor in determining the level of FDI within countries. These results can help countries implement reforms to increase FDI and help investors determine where to invest their wealth.

# Abstracts

## **Bernadette Clement**

Major: Biology

Faculty Sponsor: Dr. Deniz Yilmazer-Hanke

3:45-4:25 p.m. // Harper 3023B

“Differential Gene Expression of E2f3, FAM213a, Nqo2, GLP1R, Oxytocin, and Rgcc in the Mouse Amygdala”

Eighteen percent of the adult population in the United States suffers from anxiety and stress related disorders. This project employs a genetic mouse model to study the impact of disposition to increased fear and stress responses on gene expression in the brain. For this purpose, we studied gene expression in a brain region that is critical in regulating emotional responses, namely the amygdala. Analysis for differential gene expression was performed among the E2f3, FAM213a, Nqo2, GLP1R, Oxytocin, and Rgcc genes to discover if their up or down regulation may play a role in the anxiety level of the mouse strain.

## **Adam Cohen**

Major: Biochemistry

Faculty Sponsor: Dr. Eric Haas

3:15-4:05 p.m. // Harper 3028

“The Quantification of Phospholipids Present in Fetal Bovine Serum and Serum-Free Growth Mediums Using Gas Chromatography”

Fetal Bovine Serum (FBS) supplemented medium is commonly used for in vitro cell cultivation. To discover what makes up an effective medium for cell growth, the phospholipid concentration of Fetal Bovine Serum (FBS) supplemented and unsupplemented growth medium was analyzed. Phospholipids were extracted from Ex-Cell 420 medium and the percent composition of fatty acids

# Abstracts

was determined using gas chromatography. Serum-supplemented medium was found to contain a significantly different percentage of fatty acids as well as an additional fatty acid, linoleic acid (18:2).

## **Michael Conroy**

Major: Theatre Performane

Faculty Sponsor: Mr. Alan Klem

2:55-3:15 p.m. // Harper 3029A

“Tartuffe Unmasked: An Actor’s Interpretation of Moliere’s Famous Hypocrite”

Moliere’s most controversial play, “Tartuffe,” has been analyzed academically from historical and literary perspectives, but how can the titular character be brought to life in performance? What acting style is most effective for creating a character with few given circumstances? How does an actor find justifiable motivations and actions to please modern audiences in an archetypal hypocrite written before realist methods and writing? Can bold, unique acting choices reveal the true man behind hypocrisy’s mask? This presentation, incorporating firsthand experience with the text and examining other critically acclaimed productions for comparison and inspiration, seeks to answer these highly subjective questions.

# Abstracts

## **Damian Daszynski**

Major: Chemistry

Faculty Sponsor: Dr. David Dobberpuhl

2:30-2:50 p.m. // Harper 3029A

“Optimization of Solid-Phase Micro-Extraction/Gas Chromatography-Mass Spectrometry (SPME/GC-MS): Strategies for Monitoring the Decomposition of Red Wines”

The perceived quality of a wine is highly correlated to the abundance of measurable volatile organic compounds (VOCs). The focus of this project was to develop a method that effectively quantified VOCs using solid-phase micro-extraction (SPME) followed by analysis using gas chromatography with mass spectrometry (GC-MS). GC-MS parameters and extraction conditions were optimized. This method positively identified over 100 VOCs in dry red wines, many of which could be assigned a sensory attribute. Wine deterioration was subsequently studied, with the ultimate goal being a novel strategy to reduce degradation rates.

## **Kaitie Dougherty**

Major: Biology

Faculty Sponsor: Dr. Dustin Stairs

2:05-3:10 p.m. // Harper 3028

“Effects of Adolescent Nicotine Exposure on Amphetamine Self-Administration and the Ability of Environmental Enrichment to Alter the Nicotine Effects”

Research has shown that adolescents who use tobacco are more likely to use cocaine and amphetamines in adulthood. This investigation studied whether an enriched environment (EC) during development altered the detrimental effects of adolescent nicotine exposure on future stimulant drug use. Rats were run

# Abstracts

using a progressive ratio (PR) schedule of reinforcement. Results for the PR schedule found that at the 0.06 mg/kg/inf dose, isolated condition (IC)-nicotine treated rats maintained higher breakpoints than IC-saline, EC-nicotine and EC-saline treated rats. These results indicate that environmental enrichment may decrease the ability of adolescent nicotine exposure to increase the reinforcing effects of amphetamine.

## **Brian Farrell**

Major: Biochemistry

Faculty Sponsor: Dr. Juliane Soukup

3:15-4:05 p.m. // Harper 3028

“Structural Characterization of a Mammalian Riboswitch in the Spermine Biosynthetic Pathway”

Riboswitches are found in the 5' untranslated region of mRNAs that bind cellular metabolites and induce a conformational change in the mRNA, subsequently modifying the expression of the coding region nearby. This coding region is involved in the synthesis of the same metabolite it binds, and this system provides an efficient feedback mechanism of genetic control. Various riboswitches have been described as effective controls of genetic expression in bacterial cells, but we propose a potential mammalian riboswitch. The goal of this project is to solve the crystal structure of this putative riboswitch RNA bound to the polyamine spermine. In addition we will study the thermodynamic properties of spermine binding to its riboswitch by utilizing Isothermal Titration Calorimetry (ITC). ITC directly measures the energy involved in the binding of ligand to the sample. Results will render a better understanding of the binding properties of the metabolite to the RNA and may aid in development of synthetic ligands/metabolites for use as cancer therapies.

# Abstracts

## **Nina Fredericks**

Major: Studio Art

Faculty Sponsor: Dr. John Thein

3:20-3:40 p.m. // Harper 3029

### “Nude Layer Drawings: A Cubist Approach”

The multimedia art project which I have been working on since the spring of 2013 embraces aspects of Cubism and incorporates the classicism of nude figure drawing. Each work depicts a figure that is drawn from several different angles, thus providing a Cubist feel, along with a particular organ system. In this way, my artworks provide a new take on “layer drawings”, such as those found in anatomy textbooks where skin is transparent and organs are seen underneath. In particular, I have drawn inspiration from works of master anatomical draftsmen such as Andrea Vesalius, Frank Netter, and Henry Gray.

## **Gina Gilson**

Majors: Biology and Environmental Science

Faculty Sponsor: Dr. John Schalles

2:05-3:10 p.m. // 3028

### “Mapping the Mud: Remotely Quantifying Variability in Algal Densities”

In the tidal mudflats of Sapelo Island, Georgia, microbenthic algae color the mud as they migrate vertically to photosynthesize at low tide. These organisms contribute significantly to ecosystem productivity, serving as food for grazers and filter feeders. Variation in algal density appears to correlate with underlying geology, nutrient availability, organism distribution patterns and groundwater seepage. Data from high spectral resolution light reflectance scans were statistically regressed with measured

# Abstracts

chlorophyll pigment content of thin-slice, surficial sediment samples to produce a provisional predictive algorithm that can be used with high spatial resolution airborne spectroscopy to remotely detect and map algal densities.

## **Connor Griggs**

Major: Biology

Faculty Sponsor: Dr. David Smith

2:05-3:10 p.m. // Harper 3028

“Synthesis of N-Methyl-L- $\beta$ -hydroxyvaline Using the Schöllkopf Chiral Auxiliary”

Methicillin-resistant *Staphylococcus aureus* (MRSA) and Vancomycin-resistant *Enterococcus faecalis/faecium* (VRE) are gram-positive bacteria that continue to be problematic pathogens in hospital acquired infections. Pargamicin A is a recently isolated cyclic hexapeptide natural product possessing potent bactericidal activities against MRSA and VRE. Currently, Pargamicin A is available in limited quantities as a purified fermentation product restricting further evaluation of this antimicrobial peptide as a therapeutic agent for the treatment of drug-resistant bacteria. As part of ongoing studies on the total synthesis of Pargamicin A, efforts towards the asymmetric synthesis of N-methyl-L- $\beta$ -hydroxyvaline, an unusual amino acid found in Pargamicin A, employing the Schöllkopf chiral auxiliary will be presented.

# Abstracts

## **Evan Holland**

Major: Political Science

Faculty Sponsor: Dr. Terry Clark

2:05-3:10 p.m. // Harper 3028

### “An Examination of the Causes of Income Inequality”

This paper addresses the potential causes for income inequality. I hypothesize that all five of my independent variables: education, government policies, political stability and security, material well-being, and labor market trends are all statistically significant. The results do not support my expectations. In the first model, only material well-being, was statistically significant. In the second model, material well-being and government policies were both statistically significant.

## **Emma Hoppe**

Major: Biology

Faculty Sponsors: Dr. Soochin Cho and Dr. Mark Reedy

3:45-4:25 p.m. // Harper 3023B

### “Elucidating the Expansion of the Tissue Inhibitors of Metalloproteinase (TIMP) Multigene Family During Eukaryotic Evolution”

Tissue inhibitors of metalloproteinases (TIMPs) have been shown to play diverse roles in biochemical and physiological functions, particularly in embryogenesis, and exist in up to four paralogs (TIMP1 through TIMP4) throughout all multicellular eukaryotes. However, little work has been done to characterize the evolutionary relationship of this family and to relate this to their known functions. Here, we generate a compendium of all eukaryotic TIMP genes available in public databases to generate a comprehensive gene genealogy in vertebrates and non-vertebrates. Our study explains how the curious absence of certain gene groups occurred during the evolution of the TIMP family.

# Abstracts

## **Lexi Kaneshiro**

Major: Biology

Faculty Sponsor: Dr. Theodore Burk

3:45-4:25 p.m. // Harper 3023B

“Butterflies as Pollinators or Nectar Thieves: Studies of Flower Faithfulness in Prairie Butterflies”

Pollinators are crucial in the reproduction and genetic diversity of plant species. Butterflies are frequent visitors of flowers, but their importance as pollinators has rarely been documented and is unclear. To be effective pollinators, butterflies must exhibit “faithfulness” by visiting flowers of the same species consecutively. We examined the potential of butterflies to be effective pollinators by observing the sequence and duration of flower visits by two butterflies, the specialist Regal Fritillary (*Speyeria idalia*) and generalist Orange Sulphur (*Colias eurytheme*), at local prairies. Regal Fritillaries were very faithful flower visitors; Orange Sulphurs, while generally faithful, were much less so than Regals.

## **Elycia Kazemian**

Major: Biology

Faculty Sponsor: Dr. Mark Reedy

2:05-2:25 p.m. // Harper 3027

“Phylogenetic Analysis of Acetylcholine Receptors”

Embryology is an extremely important field of research that provides insight into preventative medicine and technology. As part of a larger project researching the effects of nicotine on chick embryos, I researched the genetic sequences of different subunits of acetylcholine receptors in eight species. The project has helped clarify the relationship among many subunits in order to proceed with the analysis of nicotine’s effects on development. Using public

# Abstracts

databases and the software MEGA, I generated phylogenetic trees of the subunits across and within species to identify misnamed subunits and give them the proper name.

## **Gloria Larson**

Major: Biology

Faculty Sponsor: Dr. Karin van Dijk

3:15-4:05 p.m. // Harper 3028

“*Pseudomonas syringae* Triggered Reduction of Host Histone H3-K9 Acetylation in *Arabidopsis* Is Type III Effector Driven and May Involve Histone Deacetylase HDA5”

Bacteria are ubiquitous, and there is a constant struggle between the host and the pathogen for dominance. *Pseudomonas syringae* is a plant pathogen that infects economically relevant crops and has structural homology to human pathogens such as *Salmonella* and the plague pathogen. Understanding *P. syringae* infection mechanisms can elucidate ways to combat plant infection and highlight starting points for understanding certain human pathogens. Using a variety of molecular genetic techniques, our lab is determining which of the roughly 40 pathogen-injected virulence proteins are responsible for the disease process in plants. Preliminary data indicates multiple virulence proteins collectively cause disease through genetic modifications and potential modulation of other intracellular components.

# Abstracts

## **Lauren Mason**

Major: Psychology

Faculty Sponsor: Dr. Thomas Lee Budesheim

2:05-3:10 p.m. // Harper 3028

“Effects of Mental and Physical Comorbidity on Observer Stigma Appraisal”

Stigma is a multifaceted social practice that has significant and far-reaching negative affects. Stigmatized individuals typically indentify as having lower self-esteem and self-efficacy, and an overall decrease in subjective life quality. The stigma associated with mental health is particularly problematic, as it has been identified as the largest barrier to seeking treatment. This population is also at an increased risk for physical disabilities, giving way to an additional set of detrimental stigmas. This study sought to examine how observer stigma attribution differs for those of single or comorbid physical and mental disorders. Hypothesized results indicate increased stigmatization for comorbid individuals.

## **Timothy McDermott**

Major: Psychology

Faculty Sponsor: Dr. Amy Badura Brack

3:45-4:25 p.m. // Harper 3023B

“Working Memory Deficits in Veterans with Combat-Related PTSD : A Magnetoencephalography Study”

To examine how posttraumatic stress disorder (PTSD) affects working memory functions, brain activity was recorded using magnetoencephalography while participants performed a Sternberg working memory task. Magnetoencephalography (MEG) is a noninvasive neurophysiological recording method that quantifies neural activity by measuring the magnetic fields generated by the

# Abstracts

brain's neuronal activity. This study reports differences in neural activity during the working memory encoding period in post-911 veterans suffering from PTSD and a demographically-matched healthy control group. Greater desynchronized neural activity was observed in the right hemisphere of PTSD group at the high-alpha frequency (10-14 Hz) as compared to the control group.

## **Anne Mirich**

Major: Chemistry

Faculty Sponsor: Dr. Bruce Mattson

4:00-4:25 p.m. // Harper 3027

“The Simple Hydrocarbon, CH<sub>4</sub>, and High Temperature Hydrogen Exchange”

Hydrocarbons are inert, unstable chemicals that become combustible in the presence of a catalyst. In the presence of the palladium catalyst we use, we can safely perform hydrogen exchange with deuterium. Like other alkanes, methane has a low affinity break its very stable H-C bonds. At high temperatures, we are able to pass methane and deuterium over a palladium catalyst and produce different isotopologues of methane. Through GS-MS results and mathematical modeling, we are able to determine which of two competing schemes describes how the exchange occurs for this seemingly simple molecule.

# Abstracts

## **Rebecca Moynihan**

Majors: Mathematics and Secondary Education

Faculty Sponsor: Dr. John Mordeson

2:05-2:25 p.m. // Harper 3029A

### “Modeling Educational Success”

Determining educational success is a controversial issue in politics today. The goal of this project is to create a mathematical model for educational success and identify factors most vulnerable to and affected by poverty, curriculum strategies, federal grants, and urbanization among others. Using fuzzy mathematics, this paper ranks states with respect to their relative progress in education. The model places weights on many components of education including poverty, curriculum strategies, federal grants, and urbanization to identify their correlation. When focused on and improved these factors could significantly increase the chance for a student’s educational success.

## **Dilasha Neupane**

Majors: Biology and Public Health

Faculty Sponsor: Dr. Charles Brockhouse

2:05-3:10 p.m. // Harper 3028

### “Blackfly Research”

Simulium, or blackflies are insects that are vectors for the parasite *Onchocerca volvulus*, which is the agent that causes river blindness. Simulium larvae secrete large amounts of aquatic silk protein known as ‘GLUE’, and this is the specific silk protein that is analyzed. Simulium’s GLUE sequences do not match anything in the Protein Data Banks (PDB), but a few features have shown to be similar to other aquatic GLUE proteins such as that of Trichoptera’s. Further, running their protein sequences through the program DISOPRED has revealed the protein’s structure to be disordered.

# Abstracts

## **Jeannie Ngo**

Major: Chemistry

Faculty Sponsor: Dr. Eric Haas

3:15-4:05 p.m. // Harper 3028

### “Evaluation of Ceramic Filter Elements for Use in Personal Water Filters”

According to the World Health Organization, over 3.4 million people die from water-related disease each year. Safe drinking water is a concern for those living in developing countries, but ceramic filter elements provide an effective means for the prevention of health issues that stem from this. The Institute for Latin American Concern has made personal water filters available to rural Dominicans since 1997. This research project analyzes rejection of bacteria in ceramic filters in order to determine which type will be most effective in preventing disease.

## **Angela O'Brien**

Majors: Sociology and Spanish

Faculty Sponsor: Dr. Alexander Roedlach

2:30-2:50 p.m. // Harper 3027

### “Studying Abroad and Personal Identity: A Case Study”

Reverse culture shock has long been recognized in the social sciences. However, little is known about the impact of reverse culture shock amongst college students who study abroad. Through the use of qualitative methods, this study explored how reverse culture shock was experienced by a group of Creighton students after a semester abroad in the Dominican Republic. Although no predictive pattern emerged, this study found that negative experiences with culture shock and/or reverse culture shock often coincided with identity crises. Furthermore, all study participants expressed increased investment in personal identity and heightened ability to pursue personal goals after studying abroad.

# Abstracts

## **Katherine Osterman**

Major: Applied Physical Analysis

Faculty Sponsor: Dr. Andrew Baruth

2:05-3:10 p.m. // Harper 3028

“Exposing Nano-scale Inversion Domains in N-polar Aluminum Nitride by Potassium Hydroxide Etching”

Essential to increasing the quality of N-polar Aluminum Nitride (AlN) is to develop uniformity in its polarity. This is typically done with time-intensive transmission electron microscopy. Wet etching conditions were investigated to identify inversion domains (ID) within N-polar AlN. Time, temperature, and molarity of Potassium Hydroxide etch were varied to distinguish and relate the IDs with the etch conditions. Using scanning electron microscopy to observe morphology, the IDs were detected as protruding columns embedded in the pyramidal structure. The etching conditions found in this study make it possible to calculate the density of IDs in N-polar AlN and to monitor polarity.

## **Kate Pitz**

Major: Biology

Faculty Sponsor: Dr. Jill A. Poole

3:15-4:05 p.m. // Harper 3028

“Organic Dust, Lipopolysaccharide, and Peptidoglycan Modulate Osteoclastogenesis”

Humans exposed to organic dusts (e.g. farmers) are at risk of developing chronic inflammatory lung disease, pronounced bone loss, and fractures. Previous research found that repetitive inhalation of organic dust, lipopolysaccharide (LPS), and peptidoglycan (PGN) resulted in pronounced bone loss in mice. Investigating the mechanism of these outcomes, organic dust and its

# Abstracts

components, LPS and PGN, were applied to osteoclast differentiation in vitro. Organic dust, LPS, and PGN significantly modulated osteoclastogenesis in a time-dependent manner. This indicates environmental inhalant exposures to agriculture-related dusts and gram positive/negative microbial components may be important in mediating adverse skeletal health outcomes such as bone loss and fracture risk.

## **Jelena Pjevič**

Major: English

Faculty Sponsor: Prof. Susan Aizenberg

3:20-3:40 p.m. // Harper 3029A

“Sift Out: A Collection of Poems “

From this poetry collection emerges a hostile union between love and war, the two most potent forces of my life. In *Sift Out*, I reflect upon the Yugoslavian War, its surplus of consequences, and specifically, how it has dominated the lives of my immediate family members and myself. I also place my own romantic relationships on display and speculate about the many states of love that I have experienced and how they continue to transform me. Finally, I declare that the relationship between love and war has always been a symbiotic one for me. One cannot exist without the other.

# Abstracts

## **Sruti Prathivadhi**

Majors: Mathematics and Biochemistry

Faculty Sponsor: Dr. Jonathan Wrubel

3:45-4:25 p.m. // Harper 3023B

“High Precision Michelson Interferometry: A Low-cost Laser Wavemeter”

Measuring the wavelength of a laser is crucial in many experiments in atomic physics. Often, a Michelson interferometer is used to do the wavelength measurement because of its high precision. The interferometer relates the path length of the light to the number of fringes that appear, a ratio that can be used to determine wavelength. By adding a cornercube track along the path of the laser, we maintain accuracy, while also being more convenient and cost-effective for the laboratory. A similar design achieved 1 part per 10<sup>6</sup> precision, and up to 3 parts per 10<sup>6</sup> wavelength accuracy.

## **Sarah Qasmi**

Major: Medical Anthropology

Faculty Sponsor: Dr. Alexander Roedlach

2:55-3:15 p.m. // Harper 3029

“What to Expect When You are Expecting: Perceptions and Preferences of Prenatal Care Among Bhutanese Refugees in Omaha”

The Bhutanese is Omaha’s new growing refugee population. Little is known about the health beliefs of the Bhutanese, the people of a landlocked nation bordering India and China. An understanding about Bhutanese perceptions and preferences to prenatal care is essential for health professionals in order to facilitate an accommodating interaction between the physician and patient. This research systematically explored (1) perceptions of prenatal care

# Abstracts

among female Bhutanese refugees in Omaha and (2) their preferences for biomedical or traditional prenatal care; or a mixture of both. Findings indicate the refugees use a mix of both biomedical and traditional prenatal care.

## **Daniel Renfro**

Major: Journalism: News Track

Faculty Sponsor: Dr. Jeff Maciejewski

4:00-4:20 p.m. // Harper 3029A

“Looks Good on Paper: Male Depictions in Advertising”

The purpose of this research is to explore the illustrations of male stereotypes in modern magazine advertisements. Qualitative content analysis will be used to analyze portrayals of men in six of the largest circulated magazines in the United States.

Categorizations will be determined based on research from scholarly journals. After categories are determined, individuals will code all ads featuring men using the determined coded categories. Coding will be completed by at least two individuals, one male and one female, trained in identifying categories and inter-coder reliability will be measured. This research will help determine the ways in which men are portrayed in contemporary advertising in an effort to understand how men are perceived in modern society.

# Abstracts

## **Jason Rogers**

Major: History

Dr. Heather Fryer

2:55-3:15 p.m. // Harper 3027

“Policy, Prejudice, and Protest: A New Look into the History of the 477th Bombardment Group”

Black serviceman’s contributions to the World War II war effort paved the way for the Civil Rights Movement in the 1960s. The all-black 477th Bombardment Group has often been written as a side note in the margins of World War II black history. A recent analysis of rarely read primary sources has provided new historical context for this lesser known unit within the historical discourse. The 477th’s story reveals how the War Department’s racial policy, although progressive, was not enough to keep racial forces from incapacitating the effectiveness of the fighting unit. When viewed in this light, one can see how the 477th’s experience was pivotal in the desegregation of the Armed Forces in 1947.

## **John Sarmiento**

Majors: Sociology and Medical Anthropology

Faculty Sponsor: Dr. Dawn Irlbeck

3:15-4:05 p.m. // Harper 3028

“The Filipino Nurse Experience at Home and at Work: A Theoretical Explanation”

I will focus on the health and family dynamics of Filipino nurses in the United States since 1990, influenced by immigration and socialization effects. I will investigate how possible social aspects (i.e. acculturation, identity, human capital, workplace experience) affect health behaviors of these immigrants in the nursing workforce and with their kin. My method of research will be using

# Abstracts

Creighton's database of scholarly articles pertaining to Filipino immigrants and their naturalization process, employment, community involvement, health descriptions, and criminal records. Ultimately, I want to connect how social factors influence the physical/mental health of immigrant Filipino nurses.

## **Anthony Schilling**

Majors: International Relations and Business

Faculty Sponsor: Dr. Terry Clark

3:45-4:25 p.m. // Harper 3023B

### “An Examination of Hedge Fund Performance”

In recent years hedge funds have become increasingly scrutinized, given their lack of regulation and secretive investment strategies. Most argue it is because of this that hedge funds are able to yield such incredibly high returns to investors. In this paper I examine what specific attributes and strategies lead to peak fund performance. I examine the effect that Long/Short and Global Macro strategies have on fund returns as well as the effect of fund manager net worth. Given the growing role they play in the Investment world, understanding what drives hedge fund performance is indeed an interesting pursuit.

# Abstracts

## **Mary Beth Schroeder**

Major: Nursing

Faculty Sponsor: Dr. Maribeth Hercinger

3:45-4:25 p.m. // Harper 3023B

### “Assessment of Cognitive Impairment Caused by Cancer Treatment”

Individuals undergoing cancer treatment experience a variety of side effects, ranging from nausea to bone marrow suppression. Cognitive impairment, one side effect of treatment, may be perceived as insignificant when compared to other severe complications. However, cognitive changes may cause more serious events and negatively influence patients' quality of life. These patients may experience forgetfulness and decreased attention, while struggling with aspects of daily life. Nurses on a Midwest oncology unit were surveyed to determine knowledge of chemotherapy induced cognitive impairment. The results will be used to design a unit-based in-service to improve quality of nursing care for these patients.

## **Taylor Thompson**

Major: Environmental Science

Faculty Sponsor: Dr. Barbara Dilly

2:05-2:25 p.m. // Harper 3029

### “A New Urban Ecology: A Case Study on Lake Olathe”

The 2010 Census reported that 80.7 percent of the U.S. population lives in urban areas, while suburban population has grown 10 times faster than central-city population in the largest metropolitan areas. However, the cost of public services and unforeseen environmental harm to accommodate this sprawl increases. This study examines how urban planners must use an urban ecology framework to

# Abstracts

ensure future use and safety of the environment. Lake Olathe in Olathe, Kansas, created for recreational and consumption uses, is polluted extensively. Scientific reports and interviews with public officials and locals will disclose troublesome social, economic, and environmental dynamics associated with environmental protection.

## **Erin Triplet**

Major: Biology

Faculty Advisor: Dr. Joyce Solheim

2:05-3:10 p.m. // Harper 3028

### “Amyloid Precursor-Like Protein 2 Expression in Irradiated Ewing’s Sarcoma”

Ewing’s sarcoma is the second most common pediatric bone cancer. If it metastasizes, the prognosis is bleak, with a low 25% five-year survival rate. Although radiation therapy generally increases immune-mediated killing of cancer cells, some cells develop resistance to immune system attempts to eradicate them. Previous work has shown that amyloid precursor-like protein 2 (APLP2) is upregulated in multiple cancer lines and reduces surface expression of antigen-presenting major histocompatibility complex I (MHC I), thereby allowing tumor cells to evade detection and destruction by cytotoxic T cells. Our goal was to examine the effects of radiation on APLP2 expression in Ewing’s sarcoma to better understand the ramifications for anti-tumor immune responses.

# Abstracts

## **Vianney Truong**

Major: Biochemistry

Faculty Sponsor: Dr. Martin Hulce

3:45-4:25 p.m. // Harper 3023B

### “Icaridin, a Better Insect Repellent?”

Insects-borne diseases kill millions of people every year and are responsible for the proliferation of diseases like West Nile and malaria. The most effective protection against insects involves the use of topically applied repellants. This research involves adding chemical groups to Icaridin, an effective insect repellant that does not cause contact dermatitis but is easily washed away by sweat. To create a slow-releasing, water-proof insect repellant, a hydrolyzable carbonate linker and a carbonate group are added to Icaridin to allow bonding to the skin. Products are then tested on snake skin to determine the rate of Icaridin release.

## **Mary Wade**

Major: Economics

Faculty Sponsor: Dr. Kristie Briggs

3:15-4:05 p.m. // Harper 3028

### “The Affect of Joint Innovation on Patent Quality”

In the “innovate or die” culture of today, economists are conducting more and more studies on research and development. With pressures from globalization and escalating R&D costs, many companies are opting to innovate with other companies and university rather than undertake massive projects individually. However, there has not been extensive research on the quality of innovation that is coming out of these newly undertaken joint ventures. This research examines how participating in cooperative research endeavors affects the quality of the innovations being patented, measured by forward patent citations. We found the more collaborators that helped develop a patent the higher the patent quality.

# Abstracts

**Annemarie Weiner**

Major: Graphic Design and Digital Design

Faculty Sponsor: Prof. Timothy Guthrie

2:30-2:50 p.m. // Harper 3029

“How Did I Get Here? A ‘Graphic’ Journey”

The world of design is constantly changing and evolving. However, its underlying purpose, communication, remains the same. Good design conveys an idea effectively and concisely in a way that is accessible to its audience. This project is inspired by an introspective look at my past and the journey that led me to the field of graphic design. By implementing some of the latest standards in web design, namely HTML5 and CSS3, as well as jQuery, I have sought to combine original vector illustrations, animation, and text to create a compelling webpage that is both easily understood and aesthetically pleasing.

# About the Honors Program

## Honors Program Mission Statement

Rooted in the university's Christian, Catholic, and Jesuit traditions, the new Honors Program relies on the belief, articulated by Pope John Paul II, that "the united endeavor of intelligence and faith will enable people to come to the full measure of their humanity." Its goal is to foster a community committed to the ongoing education of students and faculty members as fellow seekers for truth. The program seeks individuals of all faiths and backgrounds who are intelligent, well prepared academically, highly motivated, and academically adventurous. The curriculum then immerses these students in an academically rigorous but flexible program of study guided by a faculty mentor who is charged with paying special attention to the personal dimension of learning. The program ultimately understands itself as a fellowship of inquiry whose individual members have dedicated themselves without reserve to love of learning.

The program is designed for talented imaginative students desirous of participation in small, discussion-oriented classes and in courses on interdisciplinary and topical issues. It provides students with special opportunities and challenges to enhance their undergraduate experience and to contribute to the intellectual and cultural life of the University. The program also offers eligible students the opportunity to pursue a course of study that complements her or his major. Criteria for admission to the Honors Program include academic achievement and demonstrable interest in the program's aims and aspirations. Required application materials include an activities resume and two essays.

# About the Honors Program

## Honors Program Administrators

**Dr. Bridget Keegan**, Interim Dean  
College of Arts and Sciences  
Office: Eppley 214  
Phone: 402-280-4015  
Email: [BridgetKeegan@creighton.edu](mailto:BridgetKeegan@creighton.edu)

**Dr. Jeffrey Hause**, Director  
Michael W. Barry Professor  
Office: Hixson-Lied G06  
Phone: 402-280-3581  
Email: [JeffreyHause@creighton.edu](mailto:JeffreyHause@creighton.edu)

**Dr. Lydia Cooper**, Assistant Director  
Assistant Professor of English  
Office: Creighton Hall, 135F  
Phone: 402-280-3918  
Email: [LydiaCooper@creighton.edu](mailto:LydiaCooper@creighton.edu)

# About the Honors Program

## Executive Board Members

Dr. Theodore Burk  
*Department of Biology*

Dr. Nicolae Roddy  
*Department of Theology*

Dr. Lydia Cooper  
*Department of English*

Dr. Erika Moreno  
*Department of Political Science*

Dr. Gintaras Duda  
*Department of Physics*

Dr. Julianne Soukup  
*Department of Chemistry*

Fr. Michael Flecky  
*Department of Fine and  
Performing Arts*

Dr. Brooke Kowalke  
*Department of English*

Dr. Heather Fryer  
*Department of History*

Dr. Eileen Wirth  
*Department of Journalism and  
Mass Communication*

Dr. Jeffrey P. Hause  
*Department of Philosophy and  
Department of Classical and  
Near Eastern Studies*

Dr. Greg Zacharias  
*Department of English*

John McCoy  
*Student Member*

Mr. Matt Nelson  
*Department of Residence Life*

Joseph Maschman  
*Student Member*

# About the Honors Program

## Student Board Members

Student Board Executive Committee:

Gloria Larson

*President*

Evan Holland

*Vice President of Operations*

Emma Hoppe

*Vice President of Academics*

Veronica Urbik

*Vice President of Student Affairs*

Austin Spillane

*Vice President of Programming*

Michael Kotrous

*Vice President of Public Relations*

Dominic Dongilli

Carissa Hernandez

*Community Resident Advisors*

*Senior representatives*

Brian Farrell

Anne Mirich

John Sarmiento

*Sophomore representatives*

Isabelle Laposha

Troy Rowan

Emily Patton

*Junior representatives*

Anna Hensel

John McCoy

Jacquelyn Wagner

*Freshmen representatives*

Abby Draper

Jesse Kramme

Adrienne Pyle





Creighton  
UNIVERSITY  
**College of Arts  
and Sciences**

Program design by Annemarie Weiner