Creighton University
College of Arts & Sciences

12th Annual Honors Day

Program of Research Presentations

Wednesday, April 13th, 2016
2:00-5:00 p.m.
Harper Center, 3rd Floor

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Welcome from the Dean

Welcome to Honors Day, 2016.

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 and posters 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 2016 presenters!

Dr. Bridget Keegan, Ph.D.
Professor of English and 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 treatment strategies for pancreatic cancer, the effect of Twitter on the Iowa presidential caucus, and the effectiveness of protection orders for battered women. 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	Patrick Bruck	"Identification and Screening of Neoantigens for a CD4 T cell-activating Pancreatic Cancer Vaccine in Mice"
2:05 p.m.	3027A	Shane D'sa	"Different Ways of Delivering Diabetes Care"
2:05 p.m.	3029	Christopher Kokotajlo	"Psychological Momentum and Risky Decision Making"
2:30 p.m.	3027	Tessa Fulmer	"Social Activism from an Ancient Stoic Perspective"
2:30 p.m.	3027A	Isabelle Laposha	"Inducing Hypocrisy as a Means of Reducing the Negative Behavioral Tendencies of Restrained Eaters"
2:30 p.m	3029	Claire Martin	"The Marvels of Fandom: Gendered Anxieties, Social Perceptions, and the Measurements of Fan Interactivity within Televised Media"

Time:	Room:	Presenter:	Title:
2:55 p.m.	3027	William Graft	“Investigation of the Transmissible Mink Encephalopathy Species Barrier Effect via Aggregation and Solubility Screening Algorithms”
2:55 p.m.	3027A	Veronica Williams	“Characterizing the First Intron of the GLI1 Gene”
2:55 p.m.	3029	Thomas Mroz	“Degree of Valgus Alignment as a Predictor of Component Selection in Total Knee Arthroplasty”
3:20 p.m.	3027	Nicholaus Johnson	“Re-identification and Analysis of 5th-century Greek Goddess Head (JAM 1963.481) at the Joslyn Art Museum in Omaha, Nebraska”
3:20 p.m.	3027A	Hannah Wulbert	“A Move towards Individualizing Assessment”
3:20 p.m.	3029	Sofia Paz	“Getting to the Bottom of the Impasse in the Situationist Debate on Character”

Poster Presentation Schedule

Time:	Room:	Presenter:	Title:
2:05 p.m.	3023B	Suna Akkoseoglu	"The Effects of Clonidine and Yohimbine Injections in Mouse Strains Selectively Bred for High and Low Fear Responses"
2:05 p.m.	3023B	Sarah Birnbaum	"Using Symmetry and Ladder Operators to Solve the Particle-in-a-Box Problem"
2:05 p.m.	3023B	Anna Cheek	"Investigating the Parameters of 4-imino-1,2,3-triazole L'abbe Rearrangements"
2:05 p.m.	3023B	Daniel Dean	"Carbon Substrate Metabolic Diversity of Omaha Rain Garden Soil Communities"
2:05 p.m.	3023B	Morgan Eiden	"Effective Dental Services for Hispanics in Omaha"
2:05 p.m.	3023B	Nicholas Fischer	"Comparing Self-Etch Adhesives with Atomic Force Microscopy and Optical Profilometry"

Time:	Room:	Presenter:	Title:
2:05 p.m.	3028	Allison Hanser	“Parasites as an Ecological Barometer”
2:05 p.m.	3028	Salvatore Leone	“Emergent Leadership and Team Cohesiveness in Virtual Environments”
2:05 p.m.	3028	Rouba Maluf	“The Expression of Inter-Alpha-Trypsin Inhibitor Heavy Chain 3 (ITIH3) in the Mouse Brain”
2:05 p.m.	3028	Henry Mishek	“Internalization Assays and Pigment Characterization of G. obscuriglobus”
2:05 p.m.	3028	Audrey Netzel	“Assessing the Potential of glmS Riboswitch Analogs as Antibacterial Agents”
2:05 p.m.	3028	Cassidy Plunkett	“Cytoplasmic CDC25A Localization and Suppression of Apoptosis in Cancer Cells”
2:05 p.m.	3028	Manaswita Tappata	“Investigating Underlying Mechanisms of Neurogenic Microglia”

Poster Presentation Schedule

Time:	Room:	Presenter:	Title:
2:05 p.m.	3028	Athena Williams	"'I Think, Therefore I Am': Metacognitive Perceptions of Math Performance under Stereotype Threat"
2:55 p.m.	3023B	Jordan Bowman	"MAA Modified Proteins Increase Expression of LOX-1 Receptor and TNF-Alpha in Macrophage"
2:55 p.m.	3023B	Maeve Cardwell	"The Effects of Personality Type on Smoking Cessation"
2:55 p.m.	3023B	Evan Dalton	"Synthesis and Characterization of Lanthanide Thiosulfates"
2:55 p.m.	3023B	Robyn Hamada	"Comparative Conformational Dynamics of Cellular Prion Proteins towards Elucidating the Species Barrier"
2:55 p.m.	3023B	Molly Anne Krebs	"Understanding Disparities in Protection Order Outcomes: The Power Control Wheel and Intimate Partner Violence"

Time:	Room:	Presenter:	Title:
2:55 p.m.	3023B	Krysta Larson	"College Readiness: Investigating the Merits of the IB Diploma Program through the Framework for Success in Postsecondary Writing"
2:55 p.m.	3028	Cati Kral	"Proteins Necessary for Hearing in Zebrafish"
2:55 p.m.	3028	Rachel Pham	"Characterization of Dolutegravir-Loaded Cellulose Acetate Phthalate Nanoparticles for HIV Prophylaxis"
2:55 p.m.	3028	Sruti Prathivadhi	"Mathematically Modeling Cancer Metastasis through Mechanical Properties detected by a Microfluidic Microcirculation Mimetic"
2:55 p.m.	3028	Sangamithra Sathian	"Parasite-Host Behavior in Definitive Host *Tenebrio molitor* from Transposition of *Paragordius varius* in the Land Snail"

Poster Presentation Schedule

Time:	Room:	Presenter:	Title:
2:55 p.m.	3028	Jennifer Schmaus	"Using CASPA to Evaluate Bilingual Children's Speech Perception: Developmental Effects"
2:55 p.m.	3028	Zachary Tom	"Genetic Changes Underlying Adaptation and Trade-offs of pH-Adapted *Escherichia coli* Lines"
2:55 p.m.	3028	Jack Widmer	"Broad Absorption Line Variability in Active Galactic Nuclei Outflows"
2:55 p.m.	3028	Brianna Zieba	"The Effects of a PPARGamma Agonist on the Stereological Assessment of the Hippocampus and Hypothalamus in an Epileptic Model"
3:45 p.m.	3023B	Michael Holdsworth	"The Agenda Setting Function of Media and the Effects of Twitter on the 2016 Iowa Presidential Caucus"

Poster Presentation Schedule

Time:	Room:	Presenter:	Title:
3:45 p.m.	3023B	Tyler Jones	"Effects of Varying Nitrate Levels on Water Preference of Physa spp"
3:45 p.m.	3023B	Adam Kotula	"Mechanistic Investigation of Natural Products and Extracts for Potential Riboswitch Ligands"
3:45 p.m.	3023B	Melanie Ladley	"A Christian Church's Role in Karen Refugees' Assimilation into American Culture"
3:45 p.m.	3023B	Sonnie Lee	"Rat Intravenous Self-Administration on a Differential-Reinforcement-of-Low-Rates Schedule"
3:45 p.m.	3023B	Alexandra Maliha	"Description and Comparison of Scaling Procedures in Computer Design Programs (Blender and Fusion 360) for 3D Printed Prostheses"
3:45 p.m.	3028	Kelli Mans	"A Male-Determining Gene in *Simuliidae*"

Time:	Room:	Presenter:	Title:
3:45 p.m.	3028	Emily Patton	"Effects of Nicotine on Neural Crest Cell Migration in Chicken Embryos (Stages 13-14)"
3:45 p.m.	3028	Emily Peterson	"Effects of Low-Dose Nicotine Exposure on Neural Crest Cell Migration in Stage 8-10 Chicken Embryos"
3:45 p.m.	3028	Ellen Prochaska	"Investigating How Calcium Diusion Aects Metabolic Oscillations and Synchronization of Pancreatic Beta Cells"
3:45 p.m.	3028	Anthony Rauschenbach	"*Teatro Campesino* and Its Relation to the Shining Path Movement in Peru"
3:45 p.m.	3028	Troy Rowan	"Buggy Creek Virus Distribution and Dynamics in Swallow Bugs (*Oeciacus vicarius*) in Cliff Swallow (*Petrochelidon pyrrhonota*) Colonies in Southeast Nebraska and Southwest Iowa"

Poster Presentation Schedule

Time:	Room:	Presenter:	Title:
3:45 p.m.	3028	Alex Tarter	“A High-Q RF Circuit for Ultra-cold Atoms”

Schedule of Speakers

Welcome and Introduction 2:00 p.m., 3023
Dr. Lydia Cooper,
Assistant Director of the Honors Program

Closing Ceremony
Introduction to the Dean 4:30 p.m., 3023
Dr. Lydia Cooper,
Assistant Director of the Honors Program

Congratulations from the Dean 4:35 p.m. 3023
Dr. Bridget Keegan,
Dean of the College of Arts and Sciences

Congratulations from the President 4:45 p.m., 3023
Rev. Daniel S. Hendrickson, S.J.,
President of Creighton University

Closing Remarks 4:55 p.m., 3023
Dr. Jeffrey Hause,
Director of the Honors Program

Abstracts

alphabetical by last name

Suna Akkoseoglu

Major: Biology
Faculty Sponsor: Dr. Deniz Yilmazer-Hanke
3:45-4:25 p.m. // Harper 3028

"Region-Specific Expression of Inter-α-trypsin Inhibitor Heavy Chain 3 (Itih3) and its Co-Localization with Perineuronal Nets in the Mouse Brain"

Fear and anxiety are evolutionarily conserved behaviors in response to anticipated threats. The main focus in our laboratory is a new mouse strain called the C3H-like recombinant inbred strain. The goal of the present project is to characterize the cellular and extracellular expression pattern of Itih3 in the mouse brain. Itih3 may play a role in bipolar disorder, schizophrenia, and Alzheimer's and Parkinson's disease-related inflammation in the brain. The analyses from this project will reveal regions of the brain that express Itih3 and indicate if Itih3 co-localizes with other components of perineuronal nets (PNNs).

Sarah Birnbaum

Majors: Chemistry, Computer Science
Faculty Sponsor: Dr. Mark Freitag
2:05-2:55 p.m. // Harper 3023 B

"Using Symmetry and Ladder Operators to Solve the Particle-in-a-Box Problem"

The particle-in-a-box system is one of the simplest in quantum mechanics, widely taught in physical chemistry courses and usually solved with the method of differential equations. This project solves the particle-in-a-box problem using a nonstandard approach; first, the box is centered on zero rather than beginning at zero so that the symmetry of the system can be

used. Then, ladder operators, useful for solving other systems, are defined and applied to obtain the energy levels of the system. Development of this approach may provide insight into the applications of ladder operators and symmetry to other quantum mechanical systems.

Jordan Bowman

Major: Biology
Faculty Sponsor: Dr. Geoffrey Thiele
2:55-3:45 p.m. // Harper 3023 B

"MAA Modified Proteins Increase Expression of LOX-1 Receptor and TNF-Alpha in Macrophage"

A number of cell types in the liver have been suggested to play a role in the development of alcoholic liver disease which metabolize ethanol, induce inflammation, and initiate the wound healing response following chronic ethanol consumption. Cell lines were incubated in the presence of combinations of protein-adducted metabolites of ethanol and lipopolysaccharide (LPS) to examine the effects that multiple insults have on the liver in initiating ALD. Investigation of mRNA expression demonstrated an increase in LOX-1 and TNF-α levels. This study suggests LOX-1 receptor may play a role in the activity of MAA adducts in the pathogenesis of ALD.

Patrick Bruck

Major: Biology
Faculty Sponsor: Dr. Stephanie Dougan
2:05-2:30 p.m. // Harper 3027

"Identification and Screening of Neoantigens for a CD4 T Cell-Activating Pancreatic Cancer Vaccine in Mice"
Pancreatic cancer is among the deadliest of cancers, with a 5-year survival rate of only 7%. Immune-based therapies, which

have primarily targeted CD8 T cells or reprogrammed macrophages, have largely failed in pancreatic cancer patients. However, recent reports suggest that CD4 T cell vaccines may be an effective treatment strategy. We therefore hypothesized that activating neoantigen-specific CD4 T cells would lead to tumor regression in wild-type mice carrying tumors derived from the pancreatic cancer cell line Panc02. We have identified sixty promising Panc02 neoantigens and have begun screening them using an assay to detect neoantigen-specific T cells.

Maeve Cardwell

Major: Psychology
Faculty Sponsors: Shavonne Washington Krauth, Dr. Maya Khanna
2:55-3:45 p.m. // Harper 3023 B

"The Effects of Personality Type on Smoking Cessation"

This project is looking at whether a person's personality type influences their choice of method when trying to quit smoking and the success rate of the attempt. Subjects will be people who have quit within the last six months, prior to the start of the study, and people who are currently trying to quit ("quit" will be defined as an active attempt to change behavior). The aim of this project is to better understand factors that have an influential role in nicotine addiction and help smokers find the most successful means of quitting to limit discouraging failures.

Anna Cheek

Major: Biochemistry
Faculty Sponsor: Dr. James Fletcher
2:05-2:55 p.m. // Harper 3023 B

"Investigating the Parameters of 4-imino-1,2,3-triazole L'abbe Rearrangements"

Synthetic chemistry focuses on creating new organic molecules and improving production methods for desirable compounds. Triazoles are nitrogen-containing aromatic rings. 4-imino-1,2,3-

triazoles are known to undergo ring-degenerate rearrangement reactions. Such rearrangements were observed to be promoted by combinations of electron-rich groups at the imine position and electron-poor groups at the 1-triazole position. These compounds have been shown to act as anti-bacterial, anti-fungal, and anti-cancer compounds. This project focuses on improving the production of triazoles by increasing the efficiency and safety of the reaction. This investigation aimed to revisit the parameters of the L'abbe rearrangement with increased diversity of functional group representation.

Shane D'sa

Major: Health Administration and Policy
Faculty Sponsor: Dr. Sabrina Danielsen
2:05-2:30 p.m. // Harper 3027 A

"Different Ways of Delivering Diabetes Care"

In recent years, there has been an increased focus on better understanding the physician-patient relationship and how it is affected by different factors. This study delves into this relationship by examining how physicians think about delivering diabetes care to individuals based on their socioeconomic status. This is an interview-driven study in which physicians will be asked about their perspective and what ways they alter their approach to dealing with diabetic patients. The importance of this research will allow us to help inform physicians as they help patients manage diabetes, within the context of socioeconomic status.

Evan Dalton

Major: Chemistry
Faculty Sponsor: Dr. Eric Villa
2:55-3:45 p.m. // Harper 3023 B

"Synthesis and Characterization of Lanthanide Thiosulfates"

Lanthanide metals have been applied to profitable innovations in technology and medicine, but many of the fundamental properties of lanthanides have yet to be sufficiently explored. A better understanding of the coordination chemistry of hard lanthanide cations with soft ligands, such as thiosulfate anions, could lead to innovative discoveries in medicine, industry, and geochemistry. Thus far, we have successfully synthesized lanthanide thiosulfate compounds via slow evaporation and slow diffusion at room temperature. Herein, we discuss the synthesis and structural characterization of these new lanthanide thiosulfate compounds.

Daniel Dean

Majors: Biology, Environmental Science
Faculty Sponsor: Dr. Mary Vinton
2:05-2:55 p.m. // Harper 3023 B

"Carbon Substrate Metabolic Diversity of Omaha Rain Garden Soil Communities"

A key environmental problem with urban, impermeable landscapes is high runoff of water and pollutants. Rain gardens are an expanding green infrastructure countermeasure, improving water infiltration and quality. Soil metabolic processes are thought to play a significant role in this functional capacity. We studied microbial communities from Omaha's Douglas Street rain gardens, evaluating metabolic functional diversity (indexed by carbon substrate utilization) as affected by spatial position and plant location in the gardens. Our data suggest a positive correlation between functional diversity and plant root presence among well-drained soil profiles,

corroborating existing plant management techniques and laying groundwork for further investigation.

Morgan Eiden

Majors: Biology, Spanish
Faculty Sponsor: Dr. Jose McClanahan
2:05-2:55 p.m. // Harper 3023 B

"Effective Dental Services for Hispanics in Omaha"

Latinos are the fastest growing ethnic minority group in the United States today, and by 2050, they are expected to represent as much as 30% of the total U.S. population. Despite these increases, many Latino families lack regular and or adequate access to effective dental care. The objective of this study was to critically examine what dental services are available to the Latino population throughout Omaha, Nebraska, and to use this data to propose programs, tools, and practices that can help to improve access to care for this population.

Nicholas Fischer

Majors: Environmental Science, Biology
Faculty Sponsor: Dr. Andrew Baruth
2:05-2:55 p.m. // Harper 3023 B

"Comparing Self-Etch Adhesives with Atomic Force Microscopy and Optical Profilometry"

Traditionally, dentistry has utilized phosphoric acid etchants to roughen enamel for bonding. Self-etch adhesives prepare and bond at the same time, saving time. We show self-etching agents create weaker bonds than phosphoric acid using shear bond strength (SBS) and shear fatigue limit (SFL). Surface topography after etching has been reconstructed with atomic force microscopy and optical profilometry to analyze two lateral

scales. We analyzed measurements of surface and examined its ramifications in SBS and SFL. We show unique insights into resulting micro- and nano-structure from etching and demonstrate the superior increased roughness of phosphoric acid etching compared to self-etch adhesive.

Tessa Fulmer

Major: Classical & Near Eastern Studies
Faculty Sponsor: Dr. William Stephens
2:30-2:55 p.m. // Harper 3027

"Social Activism from an Ancient Stoic Perspective"

The ancient world is a lens through which we can better understand our modern society. Ancient philosophies, such as Stoicism, are the foundations for the modern moral and ethical principles that guide our everyday lives. One such principle is social justice and the activism that accompanies it; both would have been foreign concepts to ancient Romans. However, Stoicism actually encourages many of the motivations that lead to social activism. By suggesting that human beings consider themselves members of a global community, and fulfill their roles as compassionate fellow citizens, Stoicism provides the ethical base on which modern social activism sits.

William Graft

Major: Mathematics
Faculty Sponsor: Dr. Patricia Soto
2:55-3:20 p.m. // Harper 3027

"Investigation of the Transmissible Mink Encephalopathy Species Barrier Effect via Aggregation and Solubility Screening Algorithms"

Transmissible mink encephalopathy (TME) is a rare spongiform prion disease affecting the central nervous system of adult mink (*Mustela visa*), but not ferret (*Mustela putorius furo*). The primary sequences of mink and ferret cellular prion proteins (PrPc) differ only at two locations: Phe179→Lys and

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Arg224→Gln. In this work, computationally predicted conformations of mink and ferret PrPc were investigated using aggregation and solubility screening algorithms for providing potential role in the TME species barrier effect to shed light on the influence of native PrPc conformation on the species barrier effect.

Robyn Hamada

Major: Biology
Faculty Sponsor: Dr. Patricia Soto
2:55-3:45 p.m. // Harper 3023 B

"Comparative Conformational Dynamics of Cellular Prion Proteins towards Elucidating the Species Barrier"

Prion proteins are responsible for a series of fatal, transmissible neurodegenerative diseases. The infectious agents in prion diseases, PrPSc, result from the misfolding of the properly folded isomer, PrPc. Prion diseases are capable of crossing the species barrier, but the factors that determine the degree of the species barrier are not fully understood. My structural bioinformatics study analyzes the PrPc ensemble from a number of species for which experimental evidence suggests distinct species barrier tendencies. My observations suggest that the secondary and tertiary structure of the protein contribute more to the transmission barrier than the specificity of the primary sequence.

Allison Hanser

Major: Biology
Faculty Sponsor: Dr. John Shea S.J.
2:05-2:55 p.m. // Harper 3028

"Parasites as an Ecological Barometer"

Internal parasites have lifecycles involving multiple, specific hosts. Therefore, observing levels of internal parasite infestation of small mammals—a key part of most food webs--could be used as a general measure of an ecosystem's health. This project involves examining small rodents, mainly mice, for internal parasites at two different sites on Pine Ridge Indian Reservation in cooperation with Red Cloud High School and Oglala Lakota College, Yellow Bear Dam and Piya Wiconi. The former is more natural and less disturbed by human influence while the latter is more disturbed. We predict higher levels of infection in less disturbed environments than in more disturbed.

Michael Holdsworth

Major: Journalism- News & Public Relations Tracks
Faculty Sponsor: Dr. Rich Johnson
3:45-4:35 p.m. // Harper 3023 B

"The Agenda Setting Function of Media and the Effects of Twitter on the 2016 Iowa Presidential Caucus"

The ability of the agenda-setting function of the media to shape candidate salience, combined with the growing importance of social media in elections, suggests the social media accounts of major news outlets have the ability to potentially shape elections. By examining the Twitter feeds of the five largest Iowan newspapers by circulation leading up to 2016 Iowa Presidential Caucus, this study will examine the agenda-setting power of media in the social media era. The implications of this study could indicate a correlation between candidate attention on Twitter and voting percentage, and the modern day validity of media agenda-setting.

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Nicholaus Johnson

Majors: Medical Anthropology, Classical & Near Eastern Studies
Faculty Sponsor: Dr. Erin Averett
3:20-3:45 p.m. // Harper 3027

"Re-identification and Analysis of 5th-century Greek Goddess

Head (JAM 1963.481) at the Joslyn Art Museum in Omaha, Nebraska"

My research will aim to re-identify a sculpture head currently labeled as a "5th-century Greek Goddess Head," (JAM 1963.481) which resides with the Joslyn Art Museum in Omaha, Nebraska. Through the use of comparanda and additional research concerning the use of limestone sculptures throughout the Mesaoria Plain of Cyprus, I will explore its function in the ancient Greek world and establish possible places of manufacture. I will conclude by re-identifying this piece as a "5th-century Cypro-Archaic Male Votary Head." It is my hope that my research will assist the Joslyn in understanding and studying this object.

Tyler Jones

Major: Biology
Faculty Sponsor: Fr. John Shea
3:45- 4:35 p.m. // Harper 3023 B

"Effects of Varying Nitrate Levels on Water Preference of Physa spp."

Nitrate (NO3-), an important factor in both the natural cycling of nitrogen and in agriculture, impacts aquatic ecosystems. Nitrate promotes growth of algae, a food source for aquatic

snails (Physa spp.), but relatively few studies have tested snail preference for water with varying levels of nitrate. We collected snails from sites that varied in nitrate levels and tested their preference. By placing a snail between two dishes of water with different nitrate concentrations, we observed in which dish the snail moved. We predicted that snails would prefer lower nitrate concentrations, but found no correlation between nitrate concentration and snail behavior.

Christopher Kokotajlo

Major: Psychology
Faculty Sponsor: Dr. Corey Guenther
2:05-2:30 p.m. // Harper 3029

"Psychological Momentum and Risky Decision Making"

Psychological Momentum (PM) is perceived as an extra-individual force capable of impacting thoughts and behaviors in achievement contexts. Although positive PM is generally construed as beneficial and capable of elevating performance (Lerner et al., 2004), the present study tested whether positive PM may also elevate risky decision-making tendencies. Participants first completed a task in which they were imbued with PM and gave self-reported ratings of their PM and confidence. They then completed a task to measure risky behaviors. Results supported the prediction that increased PM leads to greater risky decisions. Implications can be expanded to clinical, investment, and sport settings.

Adam Kotula

Majors: Biology, Spanish
Faculty Sponsor: Dr. Julianne Soukup
3:45-4:35 p.m. // Harper 3023 B

"Mechanistic Investigation of Natural Products and Extracts for Potential Riboswitch Ligands"

In biochemistry, ligands bind to biological molecules for a variety of purposes. Riboswitches are noncoding RNAs that

utilize binding of ligands (metabolites) to affect gene expression. My studies involve a riboswitch that undergoes self-cleavage upon ligand binding, which results in degradation of the RNA and down-regulation of gene expression. I am investigating a series of natural products and extracts that contain potential riboswitch ligands using kinetic analyses. I have identified potential activators and inhibitors of riboswitch self-cleavage. The results of this project will determine which extracts should undergo further characterization.

Cati Kral

Major: Biology
Faculty Sponsor: Dr. Ken Kramer
2:55- 3:45 p.m. // Harper 3028

"Proteins Necessary for Hearing in Zebrafish"

Hearing and balance are dependent on linking an extracellular matrix to sensory hair cells. While human defects in three linkage proteins, TECTA, Otog, and Otogelin-like, are associated with hearing loss at various frequencies, it is not clear how the loss of each protein affects hearing and balance in lower vertebrates. I hypothesize that the loss of these three proteins in zebrafish will result in hearing loss at different frequencies. We used the CRISPR-Cas9 system to generate zebrafish strains in which each linkage protein is genetically knocked-out, and I will assay from hearing and balance in these fish to determine if these mutations result in distinct changes.

Molly Anne Krebs

Majors: Sociology, Medical Anthropology, Health Administration and Policy
Faculty Sponsor: Dr. Rebecca Murray
2:55-3:45 p.m. // Harper 3023 B

“Understanding Disparities in Protection Order Outcomes: The Power Control Wheel and Intimate Partner Violence”

A protection order is an order used by a court to protect a person in a situation involving alleged domestic violence, harassment, and/or sexual assault. A victim puts their trust and hope within the law. However, up until the 1960-1970s, family was regarded as a private matter and was exempt from legal scrutiny. It was not until the battered women’s movement that the first domestic violence protection order was issued in 1970. Due to this recent history and treatment of protection order cases, there has been little research regarding the time sensitivity and decision making process. I will investigate the significant influences that the Affidavit and Praecipe variables have on the initial and final outcomes of the protection order decisions.

Melanie Ladley

Major: Biology
Faculty Sponsor: Dr. Laura Heinemann
3:45-4:35 p.m. // Harper 3023 B

“A Christian Church's Role in Karen Refugees’ Assimilation into American Culture”

This study analyzes the effect of belonging to a Christian Church on the assimilation of Karen refugees into American culture in Omaha Nebraska. Level of assimilation is measured by English proficiency, housing, employment, level of satisfaction, thoughts about the future in the United States, and support networks. The study is based on observations and interviews with parishioners, which are analyzed in order to determine how Christianity has affected the level of assimilation for the refugee. This study could be used to better understand Karen refugees in Omaha, the fastest-growing Karen refugee population in the United States.

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Isabelle Laposha

Majors: Psychology, Exercise Science and Pre-Health Professions
Faculty Sponsor: Dr. Corey Guenther
2:30-2:55 p.m. // 3027 A

"Inducing Hypocrisy as a Means of Reducing the Negative Behavioral Tendencies of Restrained Eaters"

Cognitive dissonance theory has been regarded as a powerful persuasive technique in social psychology. The present study explores the use of dissonance to reduce the negative behavioral tendencies of restrained eaters, or those who display an over concern for dieting. Dissonance was activated by inducing hypocrisy in undergraduate students who were identified as restrained eaters—subjects publicly advocated awareness of the potential negative effects of restrained eating and were then made mindful of times they themselves engaged in these behaviors. Two weeks later, subjects were surveyed to evaluate the manipulation's effectiveness. Findings may have implications for how to positively approach dieting.

Krysta Larson

Majors: English, Journalism
Faculty Sponsor: Dr. Faith Kurtyka
2:55-3:45 p.m. // Harper 3023 B

"College Readiness: Investigating the Merits of the IB Diploma Program through the Framework for Success in Postsecondary Writing"

The International Baccalaureate Diploma Program (IBDP) for high school students claims to offer the best preparation for university education. My research uses excerpts of IBDP graduate interviews to investigate the extent to which the IBDP

prepares students for college-level studies. Using the habits of mind proposed by the Framework for Success in Postsecondary Writing, I coded interview excerpts, created and implemented a weighting system for the codes, and analyzed this data with the online analytic tool Dedoose. My research suggests that the IBDP succeeds at preparing students for postsecondary education, particularly in areas such as metacognition, openness, flexibility, and curiosity.

Sonnie Lee

Majors: Biology, Psychology
Faculty Sponsor: Dr. Dustin Stairs
3:45-4:35 p.m. // Harper 3023 B

"Rat Intravenous Self-Administration on a Differential-Reinforcement-of-Low-Rates Schedule"

Impulsivity, or a deficiency in behavioral inhibition, is a key determinant of drug abuse. Previous studies demonstrate that a differential-reinforcement-of-low-rates (DRL) schedule can be used to study behavioral inhibition. The purpose of this study was to develop an animal model to determine if behavioral inhibition could be established with a d-amphetamine reinforcer. Rats with previous experience to amphetamine self-administration were subjected to self-administration under a DRL schedule. Our results suggest rats can learn to self-administer intravenous amphetamine on a DRL schedule and intake increases with food deprivation. Future more controlled studies will be performed to further explore DRL drug self-administration.

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Salvatore Leone

Major: Psychology
Faculty Sponsor: Dr. Joshua Fairchild
2:05-2:55 p.m. // Harper 3028

"Emergent Leadership and Team Cohesiveness in Virtual Environments"

This study explores under which conditions members of a leaderless team emerge as team-leaders in various levels of computer-mediated communication (CMC) and varying levels of team cohesion. Participants were randomly placed into two levels of CMC: a control group consisting of a physically present team and an experimental condition communicating via video chat. Teams were also divided into either high cohesiveness or low cohesiveness (operationally defined by demeaning remarks, low psychological safety, solely negative reactions to ideas). Each team consisted of three confederates and one participant who was observed to determine if displayed behaviors were consistent with emergent-leadership criteria.

Alexandra Maliha

Major: Environmental Science
Faculty Sponsor: Dr. Jorge Zuniga
3:45-4:35 p.m. // Harper 3023 B

"Description and Comparison of Scaling Procedures in Computer Design Programs (Blender and Fusion 360) for 3D Printed Prostheses"

Advancements in computer-aided design (CAD) programs offer the possibility of fitting transitional 3D printed prostheses at a distance. Blender, a computer design program, has been used to scale and fit prostheses. Newer CAD programs, such as Fusion 360, may improve and simplify the distance fitting procedure.

The goal of this project is to describe and compare the fitting abilities of Blender and Fusion 360. Prostheses will be scaled for human subjects using both programs, and all the scaled devices will be measured within Fusion 360. Analysis will yield a comparison of the scaling abilities of the two programs.

Rouba Maluf

Major: Medical Mathematics
Faculty Sponsor: Dr. Deniz Yilmazer-Hanke
2:05-2:55 p.m. // Harper 3028

"The Expression of Inter-Alpha-Trypsin Inhibitor Heavy Chain 3 (ITIH3) in the Mouse Brain"

Inter-alpha-trypsin inhibitor heavy chain 3 (ITIH3) is a glycoprotein known to covalently bind hyaluronan. Therefore, ITIH3 may contribute to the formation of the extracellular matrix. Among five processed transcripts, ITIH3 has three protein coding variants (100, 75, and 25 kDa), which can be detected with a variety of antibodies. Preliminary studies in our laboratory have shown that ITIH3 is expressed in the brain. The goal of my project is to analyze the regional specificity of the potential isoforms of ITIH3. To do so, I will utilize three ITIH3 antibodies from three different companies by performing Wester blotting and immunohistochemistry.

Kelli Mans

Major: Biology
Faculty Sponsor: Dr. Charles Brockhouse
3:45-4:35 p.m. // Harper 3028

"A Male-Determining Gene in *Simuliidae*"

Black flies (Diptera: Simuliidae) are key in the transmission of River Blindness. This debilitating, parasitic disease affects 39 million people worldwide, 99% of which are in Africa. Only female flies are capable of transmitting the disease-causing parasite. If they blood feed on an infected host, they then transmit the parasite with every subsequent bite. This project

aims to study the mode of sex differentiation by identifying a positive male determining factor. Male-limited genes have been identified, and we have selected the most promising candidate to examine further with in situ hybridization and qRT-PCR expression analysis.

Claire Martin

Majors: English, Journalism
Faculty Sponsor: Dr. Lydia Cooper
2:30-2:55 p.m. // Harper 3029

"The Marvels of Fandom: Gendered Anxieties, Social Perceptions and the Measurements of Fan Interactivity within Televised Media"

This project's research, focused chiefly on the relationship between televised media and its fanbases, will not only aim to explore the ways in which these mediums have developed and altered their execution of narrative arcs over time with the cultivation of social media presence, but also the ways in which television's canon literary arcs are implemented directly by the interactions and desires of fans and fanworks. It will furthermore explore the influence of different online mediums as well as individual television shows and the potential development of symbiotic relationships between the shows' creators and contributing viewers.

Henry Mishek

Majors: Biology, Spanish
Faculty Sponsor: Dr. Josef Franke
2:05-2:55 p.m. // Harper 3028

"Internalization Assays and Pigment Characterization of G. obscuriglobus"

Gemmata obscuriglobus has many features uncharacteristic of prokaryotes. For instance, internalization of folded proteins is a feature thought to be exclusive to eukaryotes, however G. obscuriglobus can do just that. Internalization of Green Fluorescent Protein was observed on both agar plates and in liquid media using two growth conditions: M1 and PYGV. M1 media was used for UV mutagenesis and mutant assays. Also, G. obscuriglobus has a characteristic pink carotenoid pigment that merits further assessment. The pigment was isolated and characterization experiments followed. Understanding this unique bacteria may shed light on the evolutionary origins of these features in this organism.

Thomas Mroz

Major: Health Administration and Policy
Faculty Sponsor: Dr. Oren Goltzer
2:55-3:20 p.m. // Harper 3029

"Degree of Valgus Alignment as a Predictor of Component Selection in Total Knee Arthroplasty"

This research focuses on orthopedic clinical studies concerning the total knee arthroplasty for "valgus knees," or "knock-knees," which are angled and oriented medially rather than oriented along the mechanical axis of the leg. Usually, the decision for which component to use is made intraoperatively based on amount of soft tissue release and residual laxity; however, this study aims at determining radiographic indicators to help predict the proper component for surgery. This could have significance for surgeons as a tool to ensure they have the appropriate prosthetic parts for surgery, as well as provide information to offer accurate preoperative counseling.

Abstracts

alphabetical by last name

Audrey Netzel

Major: Biochemistry
Faculty Sponsor: Dr. Julianne Strauss-Soukup
2:05-2:55 p.m. // Harper 3028

"Assessing the Potential of *glmS* Riboswitch Analogs as Antibacterial Agents"

There is an increasing prevalence of antibiotic resistant bacteria that are responsible for many human illnesses, prompting a need for continued research on new, novel targets for antibiotic development. One novel target is the *glmS* riboswitch found in numerous gram-positive bacteria. We have shown that non-natural ligands target the riboswitch in vitro, but it is unknown whether these compounds permeate the cell wall. I am investigating the permeability of the bacterial cell wall to these ligands in *Bacillus subtilis*, *Escherichia coli*, and *Streptococcus pneumonia*. We aim to determine whether novel ligands can act as antibiotics by targeting the *glmS* riboswitch.

Emily Patton

Major: Biology
Faculty Sponsor: Dr. Mark Reedy
3:45-4:35 p.m. // Harper 3028

"Effects of Nicotine on Neural Crest Cell Migration in Chicken Embryos (Stages 13-14)"

Evident as early as development, nicotine induces drastic effects in organisms. Preliminary studies suggest neural crest cells to be sensitive to low-dose nicotine exposure during embryonic development. Using chicken as a model organism, this study aims to clarify nicotine's effects on neural crest cells. Fertilized eggs were injected with nicotine or isotonic buffering solution 24 hours after development started. After collection at 48 hours,

embryos were labelled with a fluorescently-labelled antibody specific to neural crest cells, imaged, and characterized using double-blind methods. The results may support preventative or therapeutic medical applications concerning human maternal care.

Sofia Paz

Major: Philosophy
Faculty Sponsors: Dr. Jeffrey Hause and Dr. Gary Leak
3:20-3:55 p.m. // Harper 3029

"Getting to the Bottom of the Impasse in the Situationist Debate on Character"

More and more, philosophers are applying methods traditionally associated with the sciences to answer philosophical questions. In one important set of cases, experimental philosophers have concluded that traditional virtue ethics is untenable, sparking a host of equally interesting rebuttals, some of which question the experimental methods employed, while others criticize the experimenters' conception of virtue ethics. While this dialogue has been valuable, the debate has reached an impasse. In my project, I offer a potential explanation for this impasse by examining the critiques themselves in light of developments in social and personality psychology.

Emily Peterson

Major: Biology
Faculty Sponsor: Dr. Mark Reedy
3:45- 4:35 p.m. // Harper 3028

"Effects of Low-Dose Nicotine Exposure on Neural Crest Cell Migration in Stage 8-10 Chicken Embryos"

Despite the health risks, many women smoke during pregnancy. Nicotine replacement therapy is often prescribed to aid in smoking cessation. However, previous research has indicated the teratogenic effects of low doses of nicotine, both early in embryonic development and at later stages. Neural crest cells

are a population of cells that migrate throughout the embryo and contribute to development of many structures, including parts of the nervous system, facial cartilage, and cardiac cells. I examined the effects of low-dose nicotine exposure on neural crest cell migration early in development using fluorescent antibody labeling of neural crest cells.

Rachel Pham

Majors: Biology; Spanish
Faculty Sponsor: Dr. Shibata
2:55-3:45 p.m. // Harper 3028

"Characterization of Dolutegravir-Loaded Cellulose Acetate Phthalate Nanoparticles for HIV Prophylaxis"

Nanoparticle (NP) antiretroviral drug delivery systems show promise for changing the way in which HIV is dealt. We have fabricated NPs using cellulose acetate phthalate (CAP), an antimicrobicide shown to have antiretroviral properties as an entry inhibitor, and carrying dolutegravir (DTG), an integrase inhibitor, to create an extended release HIV vaginal pre-exposure prophylaxis (PrEP). To create the extended release PrEP, we incorporated CAP-DTG-NPs into thermosensitive gels. We tested for the cytotoxicity, efficacy, and release of our NP formulations on different cell lines, primary cells, and in a 3-D, engineered vaginal tissue system.

Cassidy Plunkett

Major: Biology
Faculty Sponsor: Dr. Laura Hansen
2:05-2:55 p.m. // Harper 3028

"Cytoplasmic CDC25A Localization and Suppression of Apoptosis in Cancer Cells"

The cell cycle and apoptosis regulator CDC25A is increased in many cancers. We found increased cytoplasmic CDC25A in cutaneous SCC decreased cancer cell death. We hypothesized that cytoplasmic CDC25A may suppress cell death in other cancers as well. Subcellular localization and intensity of CDC25A was assessed using immunofluorescence while cell death was measured after inhibition of CDC25A with 25 mM NSC663284. CDC25A was primarily cytoplasmic in skin, breast, prostate, and head and neck cancer cells, while its inhibition was toxic in all but the prostate lines. Thus, increased cytoplasmic CDC25A may sensitize cancer cells to CDC25A inhibitors.

Sruti Prathivadhi

Majors: Applied Physical Analysis, Medical Mathematics
Faculty Sponsor: Dr. Andrew Ekpenyong
2:55-3:45 p.m. // Harper 3028

"Mathematically Modeling Cancer Metastasis through Mechanical Properties Detected by a Microfluidic Microcirculation Mimetic"

Accounting for over 90% of cancer deaths, metastasis is a complex process by which cancer translocates to other organs. Unfortunately, existing cancer drugs do not target metastasis, creating an urgent need for therapy. In our project, we model the mechanical properties of cancer cells. We consider the fluid dynamics of the microcirculation system and use COMSOL Multiphysics® simulations to extract elastic and viscous properties. These properties enable us to assess, in a non-invasive manner, the metastatic effects of various cancer drugs. Our work is a first step towards establishing cell mechanics as a readout to assist in anti-metastatic drug development.

Abstracts

alphabetical by last name

Ellen Prochaska

Major: Mathematics
Faculty Sponsor: Dr. Bradford E. Peercy
3:45-4:35 p.m. // Harper 3028

"Investigating How Calcium Diusion Aects Metabolic Oscillations and Synchronization of Pancreatic Beta Cells"

To understand diabetes mellitus, it is necessary to investigate the dynamics of insulin secretion in the bloodstream. Secretion occurs because of changes in the calcium concentration levels in beta cells. Using the Dual Oscillator Model (DOM), we examine how calcium handling within individual pancreatic beta cells affects the synchronization of oscillations within coupled islets. Calcium permeability was implemented into the DOM, and numerical solutions of the system were obtained via Matlab using a modified ordinary differential equation solver for stiff systems and the Automatic Differentiation for Matlab software. Our research shows whether calcium diffusion between cells enhances, diminishes, or terminates metabolic oscillations.

Anthony Rauschenbach

Majors: Spanish, Biology
Faculty Sponsor: Dr. Ryan Spangler
3:45-4:35 p.m. // Harper 3028

"*Teatro Campesino* and Its Relation to the Shining Path Movement in Peru"

Sendero Luminoso (Shining Path) moved from the countryside to the cities of Peru creating chaos throughout the 80s and 90s. The communist movement established its presence at San Cristóbal of Huamanga University, in Ayacucho, Peru, where several professors played leading roles in the revolution.

Namely, Victor Zavala Cataño, a literature professor, shed light on the exploitation of the lower class and promoted ideals of revolution through his theatrical work *Teatro Campesino*, where he placed the campesino, or peasant, as the protagonist. In analyzing the theatre we evaluated the literary devices and themes in light of the social context of Peru.

Troy Rowan

Major: Biology
Faculty Sponsor: Dr. Carol Fassbinder-Orth
3:45-4:35 p.m. // Harper 3028

"Buggy Creek Virus Distribution and Dynamics in Swallow Bugs (*Oeciacus vicarius*) in Cliff Swallow (*Petrochelidon pyrrhonota*) Colonies in Southeast Nebraska and Southwest Iowa"

Buggy Creek Virus (BCRV) is an alphavirus that is transmitted to birds by the cimicid swallow bug (*Oeciacus vicarius*) via infestation of birds' nests. In this study, we field collected swallow bugs from cliff swallow (*Petrochelidon pyrrhonota*) colonies and observed the population dynamics of the birds, bugs, and virus (via RT-PCR). Immediately following the cliff swallow migration, we saw a significant drop in the number of swallow bugs, as well as a decrease in BCRV occurrence (by 52%). These results suggest that these three distinct populations are in a dynamic equilibrium with one another.

Abstracts

alphabetical by last name

Sangamithra Sathian

Major: Biology
Faculty Sponsor: Dr. John Shea
2:55-3:45 p.m. // Harper 3028

"Parasite-host Behaviour in Definitive Host *Tenebrio molitor* from Transposition of *Paragordius Varius* in the Land Snail"

Paragordius varius, or Gordian worms, are free swimming as adults but parasitic as juveniles. The worm encysts in a transport host (aquatic insect or snail) and grows into its adult form in a definitive host (often crickets). Infected definitive hosts exhibit suicidal behaviour in which the land insect seeks water.

This behaviour has been studied in crickets, but not yet in beetles, which are easier to maintain. To test this, we exposed Tenebrio molitor beetles (mealworm) to a homogeneous mixture of snails from a site known to have horsehair worms to determine if T. molitor beetles are viable definitive hosts.

Jennifer Schmaus

Majors: Psychology, Spanish
Faculty Sponsor: Dr. Kanae Nishi
2:55-3:45 p.m. // Harper 3028

"Using CASPA to Evaluate Bilingual Children's Speech Perception: Developmental Effects"

Computer-Assisted Speech Perception Assessment quickly assesses word recognition in noise performance for English and Spanish speakers. While the English version (E-CASPA) has been validated to use with listeners five years and older, the Spanish version (S-CASPA) has not. This study evaluates the use of E-CASPA and S-CASPA with 39 6-13 year-old Spanish-English bilingual children. Participants listened to words in

quiet and in the background of noise. Results will be discussed (1) whether bilingual children's performance differs from that of their English-speaking monolingual age peers, and (2) whether bilingual children's performance varies depending on the test language.

Manaswita Tappata

Major: Biology
Faculty Sponsor: Dr. Annemarie Shibata
2:05-2:55 p.m. // Harper 3028

"Investigating Underlying Mechanisms of Neurogenic Microglia"

Microglia, the immune cells of the brain, can function as pro-inflammatory, anti-inflammatory, or as homeostatic surveillance cells. Microglial functional plasticity is involved the pathogenesis of various inflammatory and neurodegenerative diseases, making them possible targets for therapeutic interventions. This project characterized microglial functional states and found that microglia acquire a neurogenic state in response to neuronal damage. We also found that a long intergenic non-coding RNA, lincRNA-Cox2, is active in the pro-inflammatory state, suggesting that other lncRNAs may be involved in microglial plasticity. Further research will focus on specific lncRNAs and their role in promoting neurogenesis.

Alex Tarter

Majors: Physics, Mathematics
Faculty Sponsor: Dr. Jonathan Wrubel
3:45-4:35 p.m. // Harper 3028

"A High-Q RF Circuit for Ultra-cold Atoms"

Experiments involving Bose-Einstein condensates (BEC's), a state of matter at nanokelvin temperatures, provide opportunities for physicists to manipulate and study quantum systems at the macroscopic scale. An area of concern in making a BEC is the ability to manipulate the magnetic interactions

between cooled atoms. We report on the progress made toward the creation of a high-Q radio frequency circuit that creates a stable magnetic field with strength on the order of 2 gauss. In particular we describe the work done towards building a parallel-plate capacitor that locks in the resonance frequency of the circuit at precisely 120MHz.

Zachary Tom

Major: Biology
Faculty Sponsor: Dr. Alistair Cullum
2:55-3:45 p.m. // Harper 3028

"Genetic Changes Underlying Adaptation and Trade-Offs of pH-Adapted *Escherichia coli* Lines"

This study attempts to identify the genetic changes underlying the adaptation of *Escherichia coli* lines to different environmental pH values (i.e., acidic-alkaline conditions). Previous work has demonstrated that *E. coli* do improve fitness through evolution in these selection environments. These improvements, however, involve fitness trade-offs for other selection environments. Identifying the genetic changes underlying fitness changes will provide insight into how coliform organisms adapt to changing environments inside and outside hosts. To do this, we will sequence DNA from the *E. coli* lines, and use bioinformatics to investigate the changes and functioning of genes using online databases of genomes.

Jack Widmer

Major: Physics
Faculty Sponsor: Dr. Jack Gabel
2:55-3:45 p.m. // Harper 3028

"Broad Absorption Line Variability in Active Galactic Nuclei Outflows"

Active Galactic Nuclei (AGN) are compact, incredibly luminous regions at the centers of galaxies. AGN are powered by mass accretion onto super massive black holes (SMBH). As matter accretes onto the SMBH, the gravitational potential energy is converted into electromagnetic radiation. A significant fraction of AGN have mass outflows, matter ejected from the area surrounding the SMBH at relativistic velocities. These show up in spectra as Broad Absorption Lines (BAL). This project is designed to determine a relationship between AGN variability and BAL depth by analyzing spectral data from the Sloan Digital Sky Survey and comparing it to photometric data from the Catalina Sky Survey. This will help us better understand the nature of AGN.

Veronica Williams

Majors: Biology, Spanish
Faculty Sponsor: Dr. Mark Reedy
2:55-3:20 p.m. // Harper 3027 A

"Characterizing the First Intron of the GLI1 Gene"

Over the summer, I performed research in the Developmental Biology Program at Stanley Manne Children's Research Institute in Chicago. The purpose of this research was to characterize the protein complex or complexes that bind to the enhancer region of the GLI1 gene, which is a target gene of the Sonic hedgehog-Patched-Gli pathway. Previous research of the GLI1 gene found that there are six Gli protein-binding sites on the GLI1 gene that function as the enhancer of this gene. The goal of this research was to determine how many protein

complexes bind to these six Gli binding sites and their locations.

Athena Williams

Major: Psychology
Faculty Sponsor: Dr. Isabelle Cherney
2:05-2:55 p.m. // Harper 3028

"'I Think, Therefore I Am': Metacognitive Perceptions of Math Performance under Stereotype Threat"
Countless studies have shown that gendered stereotype threat negatively affects the performance of women, particularly academic performance. This is primarily due to increased anxiety for women in a stereotype threat condition. Metacognition can indicate how someone feels about his/her performance, and can more importantly be used to predict one's own performance. This study examines the differences between 548 adolescent boys' and girls' metacognitive perceptions of performance on a math test under stereotype threat or no threat conditions. Results showed a surprising interaction between sex and stereotype threat that metacognitive skills may explain. Overall, adolescents had accurate predictions about their performance on a math test.

Hannah Wulbert

Majors: Elementary Education, Theology
Faculty Sponsor: Dr. Beverly Doyle
3:20-3:45 p.m. // Harper 3027 A

"A Move towards Individualizing Assessment"

The increased significance of standardized testing in the recent decades combined with the "No Child Left Behind" act of 2001 has caused many teachers in elementary classrooms across the country to develop a "teach to the test" attitude in their

instruction and assessment methods. The goal of the proposed research is to redesign instruction and assessment methods within the classroom to create an individualized learning experience for students, while still meeting the required learning standards at both the state and national level. As a result of this method, students become more motivated in their learning and understand subject matter more effectively.

Brianna Zieba

Major: Biology
Faculty Sponsor: Dr. Kristina Simeone
2:55-3:45 p.m. // Harper 3028

"The Effects of a PPARGamma Agonist on the Stereological Assessment of the Hippocampus and Hypothalamus in an Epileptic Model"

Epilepsy is a group of neurological disorders characterized by seizures. Approximately 30% of epileptic individuals are unable to control their seizures with current medications. Individuals with epilepsy are found to have cytoarchitectural remodeling in the hippocampus following severe seizures. This study determined the level of cell death and astrogliosis in the CA1, CA3, Dentate Gyrus, PVN, and SCN regions of the brain. We studied the effect of Pioglitazone, a PPARGamma agonist, on the Kv1.1 knockout model. Cell counts and brain architecture were quantified and compared using hemotoxylin and eosin staining, glial fibrillary acidic protein staining, and unbiased stereology techniques.

About the Honors Program

Honors Program Mission Statement

Rooted in the university's Christian, Catholic, and Jesuit traditions, the 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.

Honors Program Administrators

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About the Honors Program

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Department of Physics

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Jordan Montoya
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Program by Caitlyn Ewers and Dr. Lydia Cooper