Creighton University
College of Arts & Sciences

13th Annual Honors Day

Program of Research Presentations

Wednesday, April 19th, 2017
2:00-5:00 pm
Harper Center, 3rd Floor

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Welcome from the Dean

Welcome to Honors Day, 2017.

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 2017 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 cancer metastasis, the universality of the motivation for self-enhancement, and connections between eugenic rhetoric and discourse on American democratic values. 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 pm	3027	Monika Satkauskas	"Antimicrobial Activity of Microencapsulated Benzalkonium Chloride and Cetylpyridium Chloride"
2:05 pm	3027A	Caitlin Wright	"Cura Personalis and Sylvia Plath: The Imposed Limitations and Realities of the University Student in the 1950s and Today"
2:05 pm	3029	Drew Weiner	"Self-enhancement as a Universal Motivation: A Cross-Cultural Examination of Memory Bias"
2:30 pm	3027	Curtis Focht	"De Novo Mutations and Loss of Heterozygosity in Candida albicans: The Role of Parental Genome"
2:30 pm	3027A	Simone Hussussian	"'Whatever Your Cause, It's a Lost Cause': The American Population Control Movement as Grassroots Eugenics"
2:30 pm	3029	Patrice Quadrel	"How Pet Smart Are You? Analyzing the Use of the Internet by US and UK Pet Owners to Obtain Pet Health Information"
2:55 pm	3027	Sruti Prathivadhi	"Chemotherapy Impedes in Vitro Microcirculation and Promotes Migration of Leukemic Cells with Impact on Metastasis"

Time:	Room:	Presenter:	Title:
2:55 pm	3027A	Laura Blenkush	"Application of the Discourse Tracing Method to LGBTQ+ Policy Development and Enforcement at Creighton University"
2:55 pm	3029	Jacob Recker	"Haiti's Hurricane: How Globalization Has Led Haiti to be Particularly Susceptible to Natural Disasters"
3:20 pm	3027	Kathleen Marinelli	"The Association between FDG-PET Imaging and Disease Activity in Takayasu's Arteritis"
3:20 pm	3027A	Ashley Weed	"Competing Caricatures: Caesar, Pompey, and Cato in Lucan's *Bellum Civile*"
3:20 pm	3029	Ty Venzon	"Monitoring the Recovery of South San Francisco Bay's Tidal Marshes"
3:45 pm	3027	Michaela Cantu	"Gender, Mental Health Stigma, and Peer Intervention"
3:45 pm	3027A	Jesse Kramme	"The Socratic Method as Fraternal Correction"
3:45 pm	3029	Nicholas Fischer	"Effect of Polishing Bur Force and Re-Use on Zirconia Surface Topography"

Poster Presentation Schedule

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2:05 pm	3023B	Tyler Bendrick	"CDC25A Inhibition in Squamous Cell Carcinoma"
2:05 pm	3023B	Korey Krutsinger	"Structural Studies of the Eukaryotic *OAZ1* RNA"
2:05 pm	3023B	Rachel Fernandes	"Attention Training Exerts Therapeutic Effects on PTSD Symptoms in Only Four Sessions"
2:05 pm	3023B	Patrick Andrews	"Investigating the Gating Properties of a Novel NMDA allosteric modulator"
2:05 pm	3028	Jordan Roth	"Feasibility Study for the Photoproduction of η_c mesons in Ultra-peripheral Collisions at $\sqrt{s_{NN}} = 5.12$ TeV"
2:05 pm	3028	Joslynn Hoburg	"Characteristics of Motor Related Neural Oscillations During the Eriksen Flanker Task: A Magnetoencephalography Study"
2:05 pm	3028	Stefano Byer	"Neurobiology of Fear: the Role of Amygdalar Neuropeptides in Aversive Behavior Modulation"
2:05 pm	3028	Jordan Montoya	"Space, Place and Passion in Federico García Lorca's Trilogy of Tragedy"

Time:	Room:	Presenter:	Title:
2:05 pm	3028	Sarah Snyder	"Implementation of Disposable Film Electrodes and Generation of a Quantifiable Electrochemiluminescent (ECL) Response"
2:05 pm	3028	Caitlin Lively	"A Greek Doctor in a Roman World: Cultural Barriers to the Practice of Medicine"
2:55 pm	3023B	Madison Wolfe	"Effects of Environmental Enrichment on Behavioral Inhibition Following Nicotine Exposure in Adolescence"
2:55 pm	3023B	Carina Harrison	"Characterization of Specific Glycans in the Zebrafish Inner Ear"
2:55 pm	3023B	Alison Mause	"An Evaluation of Penetrating Duodenal Injuries: A Review of the Predictors of Outcomes in 879 Patients with Penetrating Duodenal Injuries From The National Trauma Data Bank"
2:55 pm	3023B	Laura Krizan	"Osteoporosis Knowledge and Bone Health in Early Post-Menopausal Women"
2:55 pm	3023B	Emily Andrews	"Effect of Acute Exercise on Delayed Memory Recall"
2:55 pm	3023B	Alexandra Berry	"Effect of Acute Exercise on Delayed Memory Recall"
2:55 pm	3028	Abby Draper	"Needs Assessment for St. Ann's Catholic Church in Lexington, NE"

Time:	Room:	Presenter:	Title:
2:55 pm	3028	Rachel Busselman	"Roman Glass Decay and Restoration"
2:55 pm	3028	Joseph Folchert	"Development of Microchip Capillary Electrophoresis for the Use of Electrogenerated Chemiluminescence Detection of Biogenic Amines"
2:55 pm	3028	Colin Richards	"ProViewer: A Visual, Predictive Model of Television Decision Making"
2:55 pm	3028	Marisa Varghese	"Translocation of Dolutegravir-PLGA-Nanoparticles and Dolutegravir-Cellulose Acetate Phtalate-Nanoparticles Into Human Cells"
2:55pm	3028	Emma Schaffer	"Fluorescent Zn(II) Coordination Compounds of Anionic Iminotriazole Chelators"
3:45 pm	3023B	Michael Heffernan	"Blunt Aerodigestive Trauma: Predictors of Outcome"
3:45 pm	3023B	Mary Elizabeth Yeh	"Investigating the Impact of Childhood Lead Exposure on Cognitive Function and Prefrontal Cortex Development in Children and Adolescents: Initial Cognitive Task Data Relating Executive Functioning and ADHD"

Time:	Room:	Presenter:	Title:
3:45 pm	3023B	Henry Mishek	"Pigment Characterization and Optimization of Internalization in *Gemmata obscuriglobus*"
3:45 pm	3023B	Alessandra Breen	"Emergency Medicine and the Inevitable Exposure to Trauma: A Study of Resiliency and Emotion Regulation in Paramedic Students"
3:45 pm	3023B	Anh Vo	"Fractional Calculus Modelling of Cell Visoelasticity"
3:45 pm	3023B	Nicolas Villarraga	"Combined Influences of Subsystolic Regional Circulatory Occlusion and Pedal Rate on the Exercise Pressor Reflex in Healthy Adults"
3:45 pm	3028	Eric Klein	"Testing the Validity of the Stryd Power Meter as a Tool for Measuring Power Output"
3:45 pm	3028	Lindsay Durand	"The Effects Of Different Types Of High Heel Shoes On Joint Loading And Dynamic Balance During Walking"
3:45 pm	3028	Grace Rants	"Effects of Obesity on Cardiac Action Potentials at the Sino-Atrial Node"
3:45 pm	3028	Adrienne Pyle	"Ethnogeriatrics and the Migrant: Navigating the Gray Area of Healthcare for Our Graying Immigrant and Refugee Population"

Time:	Room:	Presenter:	Title:
3:45 pm	3028	Elizabeth Mause	“Penetrating Injuries to the Pancreas: Predictors of Outcome in 777 Patients from the National Trauma Data Bank, 2010-2014”
3:45 pm	3028	Nguyen Bui	“Modification of Carbon Paste Micro-Electrodes by Graphene, Ionic Liquid, Heat and Plasma Treatment”

Schedule of Speakers

Welcome and Introduction 2:00 pm, 3023
Dr. Erin Walcek Averett
Associate Director of the Honors Program

Closing Ceremony
Introduction to the Dean 4:30 pm, 3023
Dr. Erin Walcek Averett
Associate Director of the Honors Program

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

Congratulations from the Provost 4:45 pm, 3023
Dr. Thomas F. Murray
Interim Provost of Creighton University

Congratulations from the President 4:55 pm, 3023
Rev. Daniel S. Hendrickson, S.J.
President of Creighton University

Closing Remarks 5:00 pm, 3023
Dr. Jeffrey Hause
Director of the Honors Program

Abstracts

alphabetical by last name

Emily Andrews

Major: Exercise Science and Pre-Health Professions
Faculty Sponsor: Dr. Jake Siedlik
2:55 pm | Harper 3023B

"Effect of Acute Exercise on Delayed Memory Recall"

With the amount of information today's students are expected to learn, retain, and recall, effective study methods play a huge part in the academic process. Exercise potentially has an impact on delayed memory recall, and this project investigates the effects of simultaneously exercising and studying on this cognitive process. Participants were given a short passage to study while either performing an exercise protocol, or sitting in a quiet room. Then, they were tested on the passage at time periods 24 hours and 1 week later. A statistical analysis was performed to determine if exercise has a positive effect on memory recall.

Patrick Andrews

Major: Neuroscience
Faculty Sponsor: Dr. Shashank Dravid
2:05 pm | Harper 3023B

"Investigating the Gating Properties of a Novel NMDA allosteric modulator"

NMDA receptors are neurotransmitter-gated ion channels present throughout the nervous system. Their function is essential in learning, memory, and numerous other cognitive processes. Structurally these receptors are composed of four subunits which assemble to form a pore through which ions can flow, activating neurons. The specific composition of these subunits can vary, making the NMDA receptor modular by nature. We are investigating the effect of a novel pharmaceutical compound which purportedly boosts current flow through NMDA receptors containing the 2C subunit with high selectivity, an effect yet unreported for any drug in publicly available literature.

Tyler Bendrick

Majors: Biochemistry
Faculty Sponsor: Dr. Laura Hansen
2:05 pm | Harper 3023B

"CDC25A Inhibition in Squamous Cell Carcinoma"

Squamous cell carcinoma (SCC) is one of the most prevalent forms of cancer, and there is an urgent need for non-invasive treatment methods. Our lab has documented cytoplasmic overexpression of cell cycle regulator, CDC25A, in various cancerous cells. We hypothesized cutaneous SCC cells are more sensitive to inhibition when compared to nontumorigenic keratinocytes. To test this hypothesis, cells were treated with CDC25A inhibitors Vitamin K3 or NSC663284 at thirteen concentrations. SCC cells had lower IC50s for both inhibitors than non-tumorigenic skin cells. These results suggest that CDC25A may be a useful target for skin cancer treatment.

Alexandra Berry

Major: Exercise Science and Pre-Health Professions, Spanish and Hispanic Studies
Faculty Sponsor: Dr. Jake Siedlik
2:55 pm | Harper 3023B

"Effect of Acute Exercise on Delayed Memory Recall"

Exercise has been found to have a relationship with cognitive function. Delayed memory recall is one facet of cognitive function that is especially relevant for a number of populations, especially college students who are continually searching for the most productive study methods to maximize their ability to retain information and recall that information at a later time. This topic has special relevance to the campus community due to its potential benefits to academic endeavors. This study examines the effect of simultaneous studying and exercising on twenty college students to discover if exercise affects the ability to retain information.

Laura Blenkush

Major: Communication Studies, Computer Science
Faculty Sponsor: Dr. Jay Leighter
2:55 pm | Harper 3027A

"Application of the Discourse Tracing Method to LGBTQ+ Policy Development and Enforcement at Creighton University"

The presence of the LGBTQ+ community on Creighton's campus is a noteworthy organizational case study because it conflicts with the University's Catholic values. This study seeks to gain a deeper understanding of this relationship by using the discourse tracing method to analyze how policy development and enforcement has addressed the presence and needs of the LGBTQ+ community over time. The results have shown that there is a tension between the University's conservative Catholic values and its Jesuit duty to protect this community. This study helps to illuminate how discourse and policy develop within an organization with conflicting views.

Alessandra Breen

Major: Emergency Medicine, Psychology
Faculty Sponsor: Dr. Alicia Klanecky
3:45 pm | Harper 3023B

"Emergency Medicine and the Inevitable Exposure to Trauma: A Study of Resiliency and Emotion Regulation in Paramedic Students"

Emergency Medical Services (EMS) is a field of work where exposure to traumatic events is inevitable. This study investigated risk factors for Posttraumatic Stress Disorder (PTSD) in paramedic students including resiliency, emotion regulation difficulties, and coping methods. Paramedic students' reports on such variables were compared to general undergraduates, as well as measured across time. Results identified significant differences between the undergraduates and paramedic students at time 1 such that paramedic students reported increased resiliency and trauma-related coping, as well as lower emotion regulation difficulties. Implications include improved approaches in training EMS professionals for future traumatic experiences and mental-illness prevention.

Nguyen Bui

Major: Chemistry
Faculty Sponsor: Dr. Erin Gross
3:45 pm | Harper 3028

"Modification of Carbon Paste Micro-Electrodes by Graphene, Ionic Liquid, Heat and Plasma Treatment"

Microfluidic carbon paste electrode (CPE) is an easily fabricated and cheap electro-sensor device that consumes very small quantities of samples and reagents yet produce high resolution and sensitivity within a short time analysis. The traditional carbon paste electrode combines carbon (graphite) with a binder (mineral oil (MO)). However, recent studies suggest that modifying electrodes with different types of carbon, binder, heat and plasma treatment could vastly improve the electrochemical behavior of the electrode. We tested different types of CPE fabricated with graphene (carbon), different proportion of ionic liquid (IL) (binder) and a mixture of both graphene and ionic liquid. Cyclic voltammetry (CV) was then used to analyze the electrochemical behavior of the electrodes.

Rachel Busselman

Major: Biology
Faculty Sponsor: Dr. Gregory Bucher
2:55 pm | Harper 3028

"Roman Glass Decay and Restoration"

Restoring and conserving ancient artifacts is vital to allow future generations to study ancient life. Specifically, ancient glass can break and degrade relatively quickly if not protected because of its fragile composition. In my study, I will look at typical Roman glass vessels that are either in need of further restoration or that have already been restored. By focusing on the components and restoration of the glass, I will be able to better understand why glass decays and degrades and from there more fully investigate how we can better restore and protect glass objects for future study.

Stefano Byer

Major: Neuroscience
Faculty Sponsor: Dr. Ken Kramer
2:05 pm | Harper 3028

"Neurobiology of Fear: the Role of Amygdalar Neuropeptides in Aversive Behavior Modulation"

For an organism's survival, the ability to express aversive behaviors in response to threatening stimuli is essential. Zebrafish (Danio rerio) are a useful model to study an amygdalar neuropeptide and corresponding receptor, gastrin-releasing peptide (GRP) and GRP receptor (GRPR). Neuropeptides homologous to GRP have been shown to play pivotal roles in emotional, specifically fear-related, behavior modulation in other animal models. This project seeks to understand the role of GRP and GRPR in aversive behavior modulation in zebrafish. Our investigational approach relies on creation of *grp* and *grpr* knockouts of zebrafish followed by behavioral assays that provoke aversive behavior modulation.

Michaela Cantu

Major: Psychology, Spanish
Faculty Sponsor: Dr. Lee Budesheim
3:45 pm | Harper 3027

"Gender, Mental Health Stigma, and Peer Intervention"

Stigma is a major barrier to mental health diagnosis and treatment, creating tension around help-seeking or even discussion of the topic itself. To combat these harmful attitudes, we must first understand their causes and only then can we begin working to change them. In this project, I analyzed 194 students' responses to substance use vignettes (varied by gender, action, and outcome). This data shows how bias regarding gender, stigma, and blame impacts individuals' attitudes towards encouraging or discouraging professional intervention, as well as towards their peers' responses to their advice and possible treatment.

Abby Draper

Majors: Spanish & Hispanic Studies, Psychology
Faculty Sponsor: Dr. Alexander Rödlach
2:55 pm | Harper 3028

"Needs Assessment for St. Ann's Catholic Church in Lexington, NE"

In an increasingly connected and moving world, understanding diverse cultures is vital. This holds true especially in places such as Lexington, Nebraska, where a recent, large demographic shift has created a need for change, including in St. Ann's Catholic parish. Through participatory action research, our group immersed ourselves in the culture of the town and parish for one week. We conducted 107 interviews and focus groups with a sample from the 1,100 families belonging to St. Ann's, transcribed them verbatim, and coded for themes. These themes informed our assessment of the parishioners' needs, concerns, fears, and hopes for the future.

Lindsay Durand

Majors: Exercise Science and Pre-Health Professions
Faculty Sponsor: Dr. Dimitrios Katsavelis
3:45 pm | Harper 3028

"The Effects of Different Types of High Heel Shoes on Joint Loading and Dynamic Balance During Walking"

According to the American Podiatric Medical Association, 72% of women report wearing high heel shoes with 40% reporting daily use, mainly for aesthetic purposes. High heel shoes cause decreases in comfort and support and have an effect on the kinematics and kinetics of walking, increasing the risk for injury. My research investigates the differences in velocity, stability, and forces between stiletto, platform and wedge high heel shoes of the same height (3 in). By examining differences between the three high heels we can determine whether high heel structure could potentially decrease the risk of injury.

Rachel Fernandes

Majors: Psychology
Faculty Sponsor: Dr. Amy Badura-Brack
2:05 pm | Harper 3023B

"Attention Training Exerts Therapeutic Effects on PTSD Symptoms in Only Four Sessions"

During a recent trial of attention control training versus attention bias modification for PTSD, we administered the PTSD Checklist three times: pre-treatment phone screen, after four sessions, and after eight sessions. Results indicated that both interventions significantly reduced PTSD severity, and that treatment effects were achieved after only four sessions.

Nicholas Fischer

Major: Environmental Science, Biology
Faculty Sponsor: Dr. Andrew Baruth and Dr. D. Roselyn Cerutis
3:45 pm | Harper 3029

"Effect of Polishing Bur Force and Re-Use on Zirconia Surface Topography"

Usage of zirconia in dentistry has outpaced evidence-based research, leaving clinicians scant evidence for decisions. Specifically, little information exists on how differing application-forces and re-use of polishers affect zirconia topography. Zirconia topography is integral to successful biological integration of implants and proper function of crowns. Zirconia discs were divided for polishing with two brands of polishers and subdivided into clinically-relevant re-use iterations and application-forces. Surfaces were imaged with three standard techniques to allow for multiple lateral resolutions to be examined. We show application-force and re-use of polishers modulates zirconia surfaces. This represents an important step toward developing polishing protocols.

Curtis Focht

Major: International Relations
Faculty Sponsor: Dr. Anna Selmecki
2:30 pm | Harper 3027

"De Novo Mutations and Loss of Heterozygosity in Candida albicans: The Role of Parental Genome"

This project addresses the rising concern in acquired antifungal drug resistance. Through whole genome sequencing of the pathogenic yeast Candida albicans, we identified a cohort of isolates that underwent significant mutagenesis in the presence of antifungal drug. We developed software that extracts de novo mutations and loss of heterozygosity from the raw sequences. Finally, we conduct phylogenetic and motif analysis to determine how the structure of the parental genome produces patterns in the de novo mutations and loss of heterozygosity.

Joseph Folchert

Major: Chemistry
Faculty Sponsor: Dr. Erin Gross
2:55 pm | Harper 3028

"Development of Microchip Capillary Electrophoresis for the Use of Electrogenerated Chemiluminescence Detection of Biogenic Amines"

Biogenic amines are an indicator of food spoilage. If the concentrations of amines becomes too high in a food, that food may have toxic effects when consumed. For this reason, an efficient way to detect these biogenic amines is necessary in areas of food safety. The current study utilizes a system that will allow for the detection of multiple amines through the use of microchip capillary electrophoresis and electrogenerated chemiluminescence. Results showed that this method allows for an efficient way to detect multiple concentrations of different amines, compared to the traditional method that only detects a total amine concentration.

Carina Harrison

Major: Biology
Faculty Sponsor: Dr. Ken Kramer
2:55 pm | Harper 3023B

"Characterization of Specific Glycans in the Zebrafish Inner Ear"

The otoconia of the inner ear stimulate hair cells that aid in sensing gravity, orientation, and hearing. Several glycoproteins are distinctly expressed in otoconia, hair cells, or the connecting matrix, and recent evidence suggests that these may be critical to inner ear function. For instance, mutations affecting the glycosylation of Clarin-1 are associated with Usher syndrome type 3, a genetic disorder affecting human hearing and balance. The purpose of this study is to identify glycans specific to or enriched in the zebrafish inner ear and determine their role in ear development. We are currently generating and analyzing b4galt4b and b4galt2 mutant zebrafish to examine terminal galactose expression and hair cell structure, and plan to determine if Clarin-1 expression is affected.

Michael Heffernan

Major: Biology
Faculty Sponsor: Dr. Bradley Phillips
3:45 pm | Harper 3023B

"Blunt Aerodigestive Trauma: Predictors of Outcome"

Blunt trauma to the aerodigestive tract, specifically to the pharynx and esophagus, is extremely rare, but when present, can lead to significant mortality. Due to the low incidence rates of these injuries, many physicians are unable to properly diagnose and treat them. Using the National Trauma Data Bank, these injuries can be analyzed to determine the factors that contribute substantially to successful and unsuccessful treatment. This paper and poster serve to present detailed background information on pharyngeal and esophageal injuries using existing literature, and data from the National Trauma Data Bank to help determine predictors of mortality.

Joslynn Hoburg

Majors: Neuroscience
Faculty Sponsor: Dr. Amy Badura-Brack
2:05 pm | Harper 3028

"Characteristics of Motor Related Oscillations during the Eriksen Flanker Task: A Magnetoencephalography Study"

Brain activity occurs in different frequency bands, two are beta and gamma. Beta activity is associated with planning motor activity. Gamma activity in the higher frequency range, 60to80 Hz, is associated with motor execution. However, little is known about the characteristics of activity in these two bands during the Eriksen Flanker task. This task was performed while using high-density magnetoencephalography (MEG) to analyze beta and gamma activity. It was determined that gamma activity is modulated by frequency based on condition. The results provide new insights into the neurophysiological mechanisms used in motor selection.

Simone Hussussian

Majors: History, French
Faculty Sponsor: Dr. Heather Fryer
2:30 pm | Harper 3027A

"'Whatever Your Cause, It's a Lost Cause': The American Population Control Movement as Grassroots Eugenics"

Amid fears in the 1960s and 1970s that overpopulation heralded mass death and devastation, the United States implemented population control policies to stem the perceived threat. An examination of federal and state government reports, policy, advocacy organization documents, academic journals and the popular press reveals historical connections between the rationale for the population control movement, eugenic rhetoric surrounding "better breeding," and larger discourses on American democratic values. By identifying historical patterns within this rhetoric, this research seeks to expand our historical understanding of American perceptions of the relationship between fertility and citizenship at the end of the twentieth century.

Eric Klein

Major: Exercise Science and Pre-Health Professions
Faculty Sponsor: Dr. Dimitrios Katsavelis
3:45 pm | Harper 3028

"Testing the Validity of the Stryd Power Meter as a Tool for Measuring Power Output"

The purpose of my honor's thesis is to validate two different models of a power meter during running and compare them by using the gold standard in biomechanics. A Bertec instrumented treadmill that can measure ground reaction forces during level and inclined running and a Qualysis motion capture system that will allow the calculation of angular and linear velocity can be utilized for accurate calculation of power and the determination of the validity of the power meters. This research will be useful to athletes as power would be a more informative/efficient way to measure physical output during exercise.

Jesse Kramme

Majors: Philosophy
Faculty Sponsor: Dr. Jeffrey Hause
3:45 pm | Harper 3027A

"The Socratic Method as Fraternal Correction"

Fraternal correction can be understood as the attempt to remedy a friend's behavior after that friend has performed some unvirtuous action, and it is a lens through which one might understand how Socrates interacts with his interlocutors. In Socratic works by Xenophon and Plato, much is to be observed about this topic, ranging from how one should go about correcting a friend's action to how one should respond if one finds oneself on the receiving end of correction. In the space between these ends occurs a dialogue revelatory of the nature of the Socratic approach to fraternal correction.

Laura Krizan

Major: Nursing
Faculty Sponsor: Dr. Joan Lappe
2:55 pm | Harper 3023B

"Osteoporosis Knowledge and Bone Health in Early Post-Menopausal Women"

Studies have shown a large disparity in osteoporosis knowledge in early post-menopausal women. It is important to determine what these women know about osteoporosis in order to improve their bone health as 50% of post-menopausal women are diagnosed with osteoporosis in their lifetime, and 25% of these women suffer a fracture related to their weakened bones. This study analyzed a series of osteoporosis questionnaires administered as part of a larger osteoporosis study. This qualitative study determined what early post-menopausal women knew about osteoporosis and determined if their knowledge had any correlations with their bone health.

Korey Krutsinger

Major: German Studies
Faculty Sponsor: Dr. Juliane Soukup
2:05 pm | Harper 3023B

"Structural Studies of the Eukaryotic *OAZ1* RNA"

Riboswitches are elements found within noncoding regions of mRNAs that regulate gene expression via metabolite binding. Upon binding to the riboswitch, the metabolite induces a conformational change in the RNA, resulting in modulation of the expression of a nearby gene. The *OAZ1* RNA sequence is highly conserved among vertebrate genes required for polyamine biosynthesis. The vast majority of biological organisms are able to synthesize natural polyamines, which are essential for normal cell growth. Because of its unique regulatory function, this putative mammalian riboswitch has potential medicinal applications, including anticancer pharmaceuticals. The main goals of my research project are to examine the structure and function of the Ornithine Decarboxylase Antizyme Pseudoknot (*OAZ1*-PK) RNA.

Caitlin Lively

Major: Biology
Faculty Sponsor: Dr. Martha Habash
2:05 pm | Harper 3028

"A Greek Doctor in a Roman World: Cultural Barriers to the Practice of Medicine"

The poet Horace wrote, "Captured Greece took the wild victor captive, and introduced the arts to peasant Latium," and there is no denying the overwhelming evidence of the impact Greece had on Roman culture. While most influences were widely embraced and took on a Roman spin, the practice of medicine remained something wholly non-Roman. My research explores the aspects of Roman society and culture that influenced this attitude toward Greek medicine, focusing on the origins of medicine in Rome within the context of their ubiquitous, stratified class society.

Kathleen Marinelli

Majors: Biology
Faculty Sponsor: Dr. Mark Reedy
3:20 pm | Harper 3027

"The Association between FDG-PET Imaging and Disease Activity in Takayasu's Arteritis"

Takayasu's Arteritis (TAK) is a form of large vessel vasculitis characterized by inflammation of the aorta and primary branches. Fluorodeoxyglucose positron emission tomography with CAT-scan (FDG-PET) imaging is useful in detecting vascular inflammation. Serial FDG-PET scans were performed in a cohort of twenty-six patients with TAK during periods of clinically-defined active disease and subsequent clinical remission. Vascular inflammation on FDG-PET was qualitatively and semi-quantitatively defined based upon nuclear medicine physician interpretation. A novel method to measure vascular uptake on FDG-PET was developed. Clinical assessment did not always correlate with FDG-PET findings. Vascular imaging and clinical assessment capture different aspects of disease activity in TAK.

Alison Mause

Majors: Biology, Medical Anthropology
Faculty Sponsor: Dr. Mackenzie Taylor
2:55 pm | Harper 3023B

"An Evaluation of Penetrating Duodenal Injuries: A Review of the Predictors of Outcomes in 879 Patients with Penetrating Duodenal Injuries From The National Trauma Data Bank"

There are poor outcomes associated with penetrating duodenal injuries due to conflicting ideas on treatment, associated injuries, and the difficulty of obtaining a diagnosis. Because of these obstacles, an understanding of duodenal injury needs to be re-evaluated. The objective of this study was to examine the national profile of penetrating duodenal injuries using the National Trauma Data Bank and to identify predictors of outcome, national pattern of injury, and mortality per OIS grade. Overall mortality was 14.5% and most patients were young African American males with gunshot wounds. This study is part of a series reassessing traumatic abdominal injuries.

Elizabeth Mause

Majors: Biology, Psychology
Faculty Sponsor: Dr. Ted Burk
3:45 pm | Harper 3028

"Penetrating Injuries to the Pancreas: Predictors of Outcome in 777 Patients from the National Trauma Data Bank, 2010-2014"

Penetrating pancreatic injuries are rare, but due to inaccurate diagnosis and treatment, can frequently be lethal. Objectives of this study were to examine the National Trauma Data Bank (NTDB) and identify predictors of outcome for penetrating pancreatic trauma via multivariate analysis. NTDB 2010-2014 had 777 cases with complete data for our variables and outcomes. Predictors of mortality included OIS grade, HLOS, ICU LOS, and ventilation days. Majority of early deaths suffered grade IV/V injury and an associated major vascular injury. The authors encourage addition of OIS grade as a mandatory element to the NTDB to increase knowledge of low-incidence injuries.

Henry Mishek

Major: Biology
Faculty Sponsor: Dr. Josef Franke
3:45 pm | Harper 3023B

"Pigment Characterization and Optimization of Internalization in *Gemmata obscuriglobus*"

Gemmata obscuriglobus is a unique prokaryote warranting further characterization. Experiments were done to better understand the distinctive pink carotenoid pigmentation of *Gemmata* as well as to generate a specific minimal media for growth. Using UV mutagenesis, pigment-deficient mutant strains were yielded. We observed that co-culturing certain fungi with pigment-deficient mutants restored the pigmentation defect. We tested pigment recovery on different types of media as well as with different microorganisms to better understand the relationship between *Gemmata* and the co-cultured fungi. Experimentation with different minimal medias will hopefully lead to conditions which optimize *Gemmata*'s ability to internalize folded proteins.

Jordan Montoya

Majors: Biology, Spanish & Hispanic Studies
Faculty Sponsor: Dr. Jose McClanahan
2:05 pm | Harper 3028

"Space, Place and Passion in Federico García Lorca's Trilogy of Tragedy"

Set in rural southern Spain, Federico García Lorca's three tragedies Bo*das de Sangre*, *La Casa de Bernarda Alba*, and *Yerma* reveal an individual's passions, exploring both desire and anger. He accentuates these themes through his use of spaces: interiors, exteriors, personal and public. These spaces serve a variety of roles which allow each play to illustrate unique differences between these passions. By utilizing spaces in this manner, Lorca creatively formulates multi-dimensional tragedies where setting, character and dialogue come together to reveal and question the complexities of rural, southern Spain of his time.

Sruti Prathivadhi

Majors: Mathematics, Applied Physics
Faculty Sponsor: Dr. Andrew Ekpenyong
2:55 pm | Harper 3027

"Chemotherapy Impedes In Vitro Microcirculation and Promotes Migration of Leukemic Cells with Impact on Metastasis"

Although most cancer drugs target the proliferation of cancer cells, it is metastasis that leads to over 90% of all cancer deaths. We used a microfluidic microcirculation platform to determine if *in-vivo*-like mechanical stimuli can evoke responses from cells treated with chemotherapeutic drugs. We found that leukemic cancer cells treated with doxorubicin and daunorubicin have longer transit times through the device. Furthermore, there was a significant ($p < 0.01$) increase in the chemotactic migration of the doxorubicin treated leukemic cells. Both enhanced retention in the microcirculation and enhanced migration are pro-metastatic effects which can serve as new targets for anti-metastatic drugs.

Adrienne Pyle

Majors: Medical Anthropology, Spanish
Faculty Sponsor: Dr. Ryan Wishart
3:45 pm | Harper 3028

"Ethnogeriatrics and the Migrant: Navigating the Gray Area of Healthcare for Our Graying Immigrant and Refugee Population"

With immigrants and refugees from the 1950s-1990s approaching retirement age, these migrants contribute significantly to the swell in America's elderly cohort. They offer a diversity of cultural customs, beliefs, and languages, which render this population at-risk for health disparities. Of this demographic, elders are most vulnerable due to their increasing dependency on familial support or outside services. Using peer-reviewed literature, this paper pinpoints the obstacles that hinder provision of ethnogeriatric care on three structural levels-personal, provider-based, and systemic-and examines the efficacy of strategies to both mitigate these barriers and facilitate access to culturally competent healthcare for aging migrants.

Patrice Quadrel

Majors: Health Administration and Policy
Faculty Sponsor: Dr. Ted Burk
2:30 pm | Harper 3029

"How Pet Smart Are You? Analyzing the Use of the Internet by US and UK Pet Owners to Obtain Pet Health Information"

The world has become progressively reliant on the Internet as a main source for personal health information, but the rate of utilization of digital sources to access pet health information is relatively unknown. There are few research studies that have investigated the use of the Internet for veterinary health even though pets have become an increasingly significant component of people's daily lives. This research study will analyze the behaviors and perceptions of US and UK pet owners regarding accessing pet health information online and will use this information to help enhance the education of pet owners.

Grace Rants

Majors: Medical Mathematics
Faculty Sponsor: Dr. Rebecca Gasper
3:45 pm | Harper 3028

"Effects of Obesity on Cardiac Action Potentials at the Sino-Atrial Node"

Obesity in recent years has had a significant effect on the population, including on the cardiac tissue of those affected. Fat cells which accumulate in cardiac tissue, have a detrimental effect on the functioning of the sino-atrial node, which is the natural pacemaker of the heart. We investigate these effects by incorporating new parameters into the DiFrancesco-Noble (1985) ODE model of the cardiac action potential, to reflect the modified ion flow in the heart of an obese patient. After simulating the action potential propagation under various conditions, we describe a bifurcation in the ODE parameters possibly leading to cardiac arrest.

Jacob Recker

Major: Medical Anthropology
Faculty Sponsor: Dr. Laura Heinemann
2:55 pm | Harper 3029

"Haiti's Hurricane: How Globalization Has Led Haiti to be Particularly Susceptible to Natural Disasters"

Globalization, as some Anthropologists argue, is defined as a multifaceted set of phenomena that construct a common global economy. Globalization tends to favor those who have the ability to wield power in neoliberal economics by taking advantage of free trade markets in developing nations. On October 17, 2016 a Category 4 Hurricane affected the country of Haiti. Due to globalization, Haiti must rely on foreign aid and mostly foreign organizations for development. This leaves the country particularly susceptible to natural disasters. This is a narrative analysis of the following relief efforts and the response that was garnered by the media.

Zoe Reed

Major: Exercise Science & Pre-Health Professions
Faculty Sponsor: Dr. Joan Eckerson
2:05 pm | Harper 3023B

"3D Printing of Fetal Ultrasounds to Aid Visually Impaired Parents"

Three-Dimensional (3D) printing, also known as additive manufacturing, creates a 3D object from two-dimensional layers. 3D printing allows physicians and patients to handle a physical representation of structures within the body that can be difficult to access or analyze based on a 2D scan. This research works to develop a low-cost, practical methodology to 3D print a physical representation of an ultrasound scan which would provide visually impaired parents a tactile model of their unborn baby. This involves converting DICOM (Digital Imaging and Communications in Medicine) scans into files that are compatible with slicing software commonly used by additive manufacturing machines.

Colin Richards

Major: Mathematics
Faculty Sponsor: Dr. Dave Reed
2:55 pm | Harper 3028

"ProViewer: A Visual, Predictive Model of Television Decision Making"

In the multi-billion-dollar industry of television production, producers face the perennial decision of whether or not to renew a show. Renewing unsuccessful shows costs companies millions of dollars, whereas canceling would-be successful shows sacrifices significant profits. To reduce the uncertainty in this decision, we build a survival model, which utilizes the Internet Movie Data Base to predict the likelihood of a season's failure. Within our model, we incorporate viewership and reviews throughout each season thus establishing patterns of performance. Visualizing this data, we provide a graphic user interface displaying the predictions of the model on running and concluded TV shows.

Jordan D. Roth

Major: Physics, Mathematics
Faculty Sponsor: Dr. Janet Seger
2:05 pm | Harper 3028

"Feasibility Study for the Photoproduction of η_c mesons in Ultra-peripheral Collisions at $\sqrt{s}_{NN} = 5.12$ TeV"

In order to evaluate the possibility of detecting the decay of the $\eta_c(1S)$ into a $K^*(892)^0K^-\pi^+$ or $\overline{K}^*(892)^0K^+\pi^-$ state in ultra-peripheral Pb-Pb collisions at a center of mass energy of 5.12 TeV per nucleon, the STARlight Monte Carlo event generator is used to model the photoproduction of the η_c, and PYTHIA is used to model its decay into a final state of $K^+\pi^-K^-\pi^+$. The η_c is allowed to decay along the signal channels, its $K^*(892)^0\overline{K}^*(892)^0$ channel, or directly into the final state. The signal-to-background ratio for these processes is computed at approximately 3.08. Modifications to STARlight made for the future investigation of the $\gamma\gamma \rightarrow K^+K^-$ background are described.

Monika Satkauskas

Major: Chemistry, Medical Mathematics
Faculty Sponsors: Dr. Stephen Gross
2:05 pm | Harper 3027

"Antimicrobial Activity of Microencapsulated Benzalkonium Chloride and Cetylpyridinium Chloride"

Dental caries occurs due to the accumulation of plaque. Clinical practices remove diseased hard tissues and fill the cavity. Polymerized composites shrink and form gaps where bacteria could decay the tooth under the composite to form secondary caries. It is beneficial to develop bacteriostatic dental composites to reduce recurrent decay. The release of a microencapsulated antimicrobial agent can be controlled via the chemical composition of the shell and the initial concentration of therapeutic agent. A new agar plating method was developed to determine the antimicrobial activity of the microencapsulated agents (benzalkonium chloride and cetylpyridinium chloride) against Escherichia coli.

Emma Schaffer

Major: Chemistry
Faculty Sponsor: Dr. James Fletcher
2:55 pm | Harper 3028

"Fluorescent Zn(II) coordination compounds of anionic iminotriazole chelators"

Coordination compounds made by coordinate bonding between aromatic organic ligands and metal cations have many applications. If complex formation coincides with a change in UV-Visible absorbance or fluorescence emission these systems can act as sensors to detect metal cations. In this project, a tandem click reaction was used to prepare 4-formyl-1,2,3-triazole analogs with electron-donating benzyl groups at the 1-position. These reacted with 2-aminophenol to create imine compounds, which formed coordination complexes with Zn(II). The peak emission wavelength was 610nm. The syntheses of the aldehyde, imine, and metal complexes were confirmed via NMR and mass spectrometry. As these ligands generate fluorescence emission only upon coordination with Zn(II), these compounds could be used as a zinc sensor in future applications.

Sarah Snyder

Majors: Neuroscience, Spanish
Faculty Sponsor: Dr. Erin Gross
2:05 pm | Harper 3028

"Implementation of Disposable Film Electrodes and Generation of a Quantifiable Electrochemiluminescent (ECL) Response"

The primary goal of this study is the fabrication of film electrodes and investigation of their most efficient implementation in cyclic voltammetry experiments through varying the condition of the reference electrode. Finding optimal conditions for use of this new film electrode makes for a useful and disposable method for running experiments since these electrodes are able to generate an electrochemiluminescent (ECL) response. Next, a means of quantifying and analyzing this ECL response is generated with use of cell phone cameras intertwined with useful modern applications and software, potentially very useful in clinical settings, for example in concentration-change detection.

Marisa Varghese

Major: Biology
Faculty Sponsor: Dr. Annemarie Shibata
2:55 pm | Harper 3028

"Translocation of Dolutegravir-PLGA-Nanoparticles and Dolutegravir-Cellulose Acetate Phtalate-Nanoparticles Into Human Cells"

Acquired immune deficiency syndrome (AIDS), caused by HIV infection, is responsible for about 34 million deaths. Antiretroviral drugs are being evaluated for pre-exposure prophylaxis (PrEP) of HIV infections. Our collaborators have synthesized nanoparticles (NPs) using two types of polymers: cellulose acetate phthalate (CAP) and poly(lactic-co-glycolic acid) (PLGA). In this study, CAP and PLGA NPs are loaded with dolutegravir (DTG), an FDA-approved integrase inhibitor, with high intrinsic membrane permeability. NPs were tagged with fluorescent rhodamine to visualize delivery into cells. Delivery into human primary human peripheral blood cells (PBMCs) was determined using flow cytometry with a LIVE/DEAD™ counter stain. The best method of delivery of the drugs to human cells will allow for the development of targeted therapies.

Ty Venzon

Majors: Biology, Business Administration
Faculty Sponsor: Dr. John Schalles
3:20 pm | Harper 3029

"Monitoring the Recovery of South San Francisco Bay's Tidal Marshes"

The San Francisco Bay Area is home to ecologically significant tidal marshes, despite the region's rapid urbanization of the past couple decades. My project focuses on evaluating the health of the vegetation of the South San Francisco Bay tidal marshes to see if a decade of conservation has made an impact. I began this project last year for my remote sensing course and gathered field data in the Alviso and Ravenswood zones last summer. The goal of this research is to evaluate the health of these wetlands, which function as carbon sinks and as nesting grounds for endangered species.

Nicolas Villarraga

Major: Psychology
Faculty Sponsor: Dr. Annemarie Shibata
3:45 pm | Harper 3023B

"Combined Influences of Subsystolic Regional Circulatory Occlusion and Pedal Rate on the Exercise Pressor Reflex in Healthy Adults"

The contribution of metabolic vs mechanical stimuli related to the group III/IV afferent-mediated exercise pressor reflex (EPR) remains incompletely understood. High pedal frequency during cycling increases type II muscle fiber recruitment and may contribute to increased anaerobically-mediated metabolic byproduct accumulation. This may lead to an augmented rise in systolic blood pressure (SBP) and, hence, EPR in humans. Thus, we hypothesized, 1) Mean arterial pressure (MAP) will be increased during exercise with SubRCO vs without NoRCO irrespective of pedal frequency, and 2) MAP will be augmented further during exercise with SubRCO at high pedal frequencies.

Anh Vo

Majors: Mathematics, Physics
Faculty Sponsor: Dr. Andrew Ekpenyong
3:45 pm | Harper 3023B

"Fractional Calculus Modelling of Cell Viscoelasticity"

Fractional calculus is a field which allows taking derivatives or integrals to non-integer orders. We used advanced theoretical and computational methods to model the viscoelastic properties of cells. Using Mathematica, we compared fits using both classical models and fractional calculus versions in Mittag-Leffler form. Our results show that fractional models fit cell viscoelastic data better than integer models. Cells that are more fluid-like are best fit using a fractional derivative of order 0.7. The fractional order models of viscoelasticity that we have used appear to render dynamic mechanical properties of cells tractable, enabling their better biophysical characterization in health and disease.

Ashley Weed

Majors: Classical Languages, Psychology
Faculty Sponsor: Dr. William O. Stephens
3:20 pm | Harper 3027A

"Competing Caricatures: Caesar, Pompey, and Cato in Lucan's *Bellum Civile*"

Epic poet Lucan (39-65 CE) writes his *Bellum Civile* during a transitional period in the Roman Empire. As sociopolitical structures shift after the civil war, status and masculinity are no longer maintained primarily by seizing control over others, but rather by exercising control over oneself. Lucan's caricatured portrayals of his three protagonists, Caesar, Pompey, and Cato, reflect a rejection of these new Imperial standards of status as well as their Republican predecessors.

Drew Weiner

Majors: Psychology, Spanish Literature
Faculty Sponsor: Dr. Lee Budesheim
2:05 pm | Harper 3029

"Self-enhancement as a Universal Motivation: A Cross-cultural Examination of Memory Bias"

Pancultural self-enhancement was examined using a memory bias paradigm. In Experiment 1, participants from an individualistic culture (the United States; n=89) and from a collectivistic culture (the Dominican Republic; n=80) made choices between consumer products. Four days later, their memory of the products' attributes was tested: results indicated a significant bias in both samples wherein participants inaccurately remembered information in favor of their choices. In Experiment 2, participants were randomly assigned bogus feedback about their intelligence. When recalling the feedback, participants from both cultures inflated the feedback more the worse it was. Results support self-enhancement as a universal motivation.

Madison Wolfe

Major: Psychology
Faculty Sponsor: Dr. Dustin Stairs
2:55 pm | Harper 3023B

"Effects of Environmental Enrichment on Behavioral Inhibition Following Nicotine Exposure in Adolescence"

Despite significant effort of campaigns to decrease tobacco use, smoking tobacco remains the leading preventable cause of death in the United States. It has been well established that tobacco use is associated with a diminished ability to inhibit behavior. Behavioral inhibition is one aspect of impulsivity in which the subject must withhold a response to receive a reinforcer. This study explored if environmental enrichment altered behavioral inhibition in differentially reared rats following nicotine exposure in adolescence. Significant differences were seen in responding rates of animals in the enriched and isolated conditions, indicating an effect of environmental enrichment on behavioral inhibition.

Caitlin Wright

Majors: English, Spanish
Faculty Sponsor: Dr. Greg Zacharias
2:05 pm | Harper 3027A

"Cura Personalis and Sylvia Plath: The Imposed Limitations and Realities of the University Student in the 1950s and Today"

Sylvia Plath's journal entries from 1950-1953 expose the limitations Plath felt consumed by in her time at Smith College, limitations that were later articulated into the image of a fig tree in Plath's only published novel, *The Bell Jar*. A hybrid, digital media presentation featuring copy-text, facsimiles, and analyses of Plath's early works introduces an intimate, yet accessible experience regarding her thoughts and observations. The personal dialogue serves as a supplement to the works and provides a correlation between Plath's collegiate life in the 1950s and that of a young woman today. This narrative contributes to the understanding of Plath and the goal of this project: the use of Sylvia Plath's journals as a platform for cura personalis among adolescents of current culture and society.

Mary Elizabeth Yeh

Major: Neuroscience
Faculty Sponsor: Dr. Maya Khanna
3:45 pm | Harper 3023B

"Investigating the Impact of Childhood Lead Exposure on Cognitive Function and Prefrontal Cortex Development in Children and Adolescents: Initial Cognitive Task Data Relating Executive Functioning and ADHD"

The ultimate goal of this longitudinal study is to use MEG, fMRI, and cognitive assessments to investigate how elevated blood lead level (eBLL) during childhood may impact cognitive and physical brain development. Lead is a known neurotoxin that is linked to hampered cognition, academic performance, intelligence, and adult brain volume. No longitudinal study thus far has used MEG, fMRI, and cognitive tests to link eBLL to childhood brain development. The present data excludes incoming eBLL data in order to first establish a relationship between two cognitive measures that will be later analyzed with respect to blood lead level data.

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.

Nominees for the Dean's Award for Research

Laura Blenkush (Communication Studies, Computer Science)

Evan Dalton (Chemistry)

Nick Fischer (Environmental Science, Biology)

Carina Harrison (Biology)

Michael Heffernan (Biology)

Joslynn Hoburg (Neuroscience)

Tyler Jones (Biology)

Krysta Larson (English, Journalism)

Sofia Paz (Philosophy)

Rachel Pham (Biology, Spanish)

Jordan Roth (Physics, Mathematics)

Jennifer Schmaus (Psychology, Spanish)

Ashley Weed (Classical Languages, Psychology)

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Dr. Greg Zacharias
Department of English

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