Creighton University
College of Arts & Sciences

8th Annual Honors Day

Program of Research Presentations

Wednesday, April 18th, 2012
2:00- 5:00 PM
Harper Center, 3rd Floor

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Welcome from the Dean

Welcome to Honors Day 2012.

Today we recognize certain achievements of Arts and Sciences students, and in doing so, honor them for the innovation, creativity, and dedication that they have demonstrated in their academic work. I have no doubt that as you stop in to listen to a presentation, to study a poster, or to ponder a piece of artwork, you will be amazed by what undergraduates can produce when provided the proper combination of freedom of inquiry, disciplined focus, and mentorship from faculty. 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. To the students, I say, we are proud of your contributions to Creighton and to your fields. We honor you.

Congratulations, Class of 2012!

Robert J. Lueger, Ph.D.
Dean, College of Arts and Sciences

Welcome from the Director

Dear Graduating Seniors,

Four years ago, you entered Creighton as freshmen filled with ambition and anxiety. Moved by your lofty goals, and inspired by the values of the Honors Program, you began a challenging course of education and personal development, trusting that completing this course would ready you to fulfill your ambitions and serve the wider community. With growing success, your anxiety gave way to hope, as hope gave way to certainty. Those of us who shared your anxieties and hopes can today share that certainty as we witness the extraordinary fruit of your ambition. Your passion for learning, dedication to the truth, and commitment to promoting just and fruitful ways of thinking are on display for us to see and celebrate. We are rightly proud of you for your impressive achievements.

Congratulations, Class of 2012.

Dr. Jeffrey Hause
Honors Program Director

Oral Presentation Schedule

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2:05	3027	Patrick Carroll	**Differential Localization of Dendritic Cells in Asymptomatic and Symptomatic Human Atherosclerotic Plaques**
2:05	3028A	Kevin Lee	**The Evolution of the Etruscan City: A Theoretical Approach**
2:30	3029	David Austerberry	**Kinematic Variability of Absorbers in the Seyfert 1 Galaxy NGC 3783**
2:30	3028B	Eric Hansen	**Gubernatorial Influence in Federal Policy Implementation: Evidence from the Pre-existing Condition Insurance Program (PCIP)**
2:30	3028C	Neil Hassler	**What are the odds? Lotteries and State Revenues**

Oral Presentation Schedule

Time	Room	Presenter	Title
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2:55	3027	Jack Kostal	**Performance Under Pressure: Stereotype Threat, Achievement Motive, and Locus of Control**
2:55	3027A	Zac Holmes	**Effect of microRNA-183 Family on Expression of Genes That Reinforce Neurosensory Cell Fate in the Inner Ear**
2:55	3029	Erin Cahill	**"Sung Reading": An Operatic Approach to P.Craig Russell's Graphic Novel *The Ring of the Nibelung***
3:20	3028A	Allen Cox	**Parallelization of General Atomic and Molecular Electronic Structure Systems (GAMESS) to Decrease Computation Execution Time**
3:20	3028B	Colleen Blosser	**Legitimizing the French Vernacular: A Comparative Analysis of Artes Poeticae**

Oral Presentation Schedule

Time	Room	Presenter	Title
3:20	3028C	Timothy Malouff	**Genetic Deletion of Egfr Results in Resistance to Cyclophosphamide-induced Alopecia**
3:45	3028	Katie Young	**"Drawing" Conclusions: Visual Representation of Theme Using Elements and Principles of Design**
3:45	3027	Alan Buttars	**OutLiars: The Relationship between Political Ideology and Dishonesty**
3:45	3029	Patrick Kilcoyne	**Drama Therapy: Theatrical Coursework for Students with Autism**
4:10	3028A	Erin Bruggeman	**A Retrospective Study to Determine the Significance of Chlorhexidine (CHG) Bathing of Patients with Central Lines**
4:10	3028C	Shannon Frech	**Heirlooms: A Family History in Poetry**
4:10	3028B	Meghan Smith	**Interactions of HopV1 in a Type Three Secretion System**

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2:00	3023	Matthew Kor	**Biological Indicators of Immune Response in Two Insects**
2:00	3023	Peter Bermes	**Green Counties: A Study of Conservation Spending at the County Level**
2:00	3023	Nathan Messbarger	**Encapsulation of Lysozyme for use in a Model Reverse Thermal Drug Delivery System**
2:00	3rd Floor Hallway	Madeline Heck	**The Florence Clinic, Frefugee Populations, and Community**
2:00	3rd Floor Hallway	Anne James	**Effect of TIMP-2 on Neural Crest Pathfinding**

Poster Presentation Schedule

Time	Room	Presenter	Title
2:00	3rd Floor Hallway	Rob Placek	**Canadians of a Different Color: Analyzing Nativism in Modern Canadian Voters**
2:00	3rd Floor Hallway	Angelica Woo	**Characterization and Expression of Simulium vittatum (black fly) Silk Genes: An Examination of Silk Genetics and Evolution**
2:30	3023	Ryan Wiggins	**Psychosexual History Comparison Between Intrafamilial and Extrafamilial Child Sex Offenders**
2:30	3023	Justine Bucy	**Play, Creativity, and Gender Schema Flexibility**
2:30	3023	John Kelsey	**Pulmonary Gas Exchange During Exercise in Healthy Fit Older Adults**
2:30	3023	Virginia Barak	**Serological Study of Ectoparasite-Specific Immune Responses in Passerine Birds of Western Nebraska**

Poster Presentation Schedule

Time	Room	Presenter	Title
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2:30	3rd Floor Hallway	Halley Faulhaber	**Relationship Between VO2 Max and VO2 Max Estimated from a 1.5 Mile Run in Division I Cross Country Athletes Immediately Following the Completion of the Regular Season**
2:30	3rd Floor Hallway	Jennifer Suleiman	**Exploring the Mating Behaviors of Nebraska and Oklahoma Squash Bugs**
2:30	3rd Floor Hallway	Madeline Novoa	**Effect of Acute Aspirin Ingestion on Urinary D-Lactate Concentration**
3:00	3023	Lauren Shoemaker	**Effects of Caffeine in an Ethanol Solution on Ethanol Drinking in a Two-Bottle Choice Procedure in Rats**

Poster Presentation Schedule

Time	Room	Presenter	Title
3:00	3023	Robert Steininger	**Effect of Vitamin D Deficiency on the Distribution of Immune Cells in the Airway of Vitamin D Deficient Swine Model**
3:00	3023	Michelle Garner	**Cognitive Dissonance and Social Justice**
3:00	3023	Wayne Gergens	**Studies in Fluoro-Benzylated Histidine Residues**
3:00	3023	Donald Schrack	**Structural Characterization and Analysis of Pre-Queuosine1-II Riboswitch**
3:00	3023	Shweta Goswami	**The Study of Riboswitches**
3:00	3rd Floor Hallway	Aunum Akhter	**Measuring the Rate of Nicotine Uptake in Developing Embryos**
3:00	3rd Floor Hallway	Christopher Culhane	**Acetylation Regulates KSR1 and 14-3-3 Association**

Poster Presentation Schedule

Time	Room	Presenter	Title
3:00	3rd Floor Hallway	Elizabeth Timberlake	**The Relevant Role of Monasteries in the Creation of European Culture**
3:00	3rd Floor Hallway	Brenden Mar	**Development and Characterization of a Microfluidic On-Chip Reference Electrode**
3:00	3rd Floor Hallway	Christopher Carlson	**A Study of the Effects of a Mammalian Riboswitch on Antizyme Gene Expression and the Spermine Biosynthetic Pathway**
4:30	3023	Administrators' Remarks	**Presentation of Awards**

Abstracts

Aunum Akhter
Major: Biology
Faculty Sponsor: Dr. Mark Reedy
3:00-4:00, 3rd Floor Hallway

Measuring the Rate of Nicotine Uptake in Developing Embryos

The developing chicken embryo is a good model system for studying how teratogens like nicotine disrupt normal development. We have shown previously that exposure to a single low dose of nicotine at neurulation significantly disrupts normal development four days later. However, attempts to understand the mechanism behind these effects have been hampered by not knowing how quickly the embryos actually take up the nicotine from the yolk. Here we report on our preliminary efforts to develop a method for measuring the rate of nicotine uptake using HPLC and GCMC.

David Austerberry
Major: Physics
Faculty Sponsor: Dr. Jack Gabel
2:30-2:55, Room 3029

Kinematic Variability of Absorbers in the Seyfert 1 Galaxy NGC 3783

Several epochs of spectroscopic observations of NGC 3783 have been made over the past decades. Recent data from Hubble's Cosmic Origins Spectrograph show that multiple absorbing components have changed in velocity and column density. Models for kinetic luminosity measurements include independent covering factors for continuum, narrow, and broad line emission sources. Together with ionic column densities, these parameters constrain photo-ionization models to determine the kinetic luminosity of the absorbers. The ratio of an outflow's kinetic luminosity to its quasar's bolometric luminosity is relevant to theories of galaxy growth and evolution. Models for the observed changes to absorber kinematics are compared.

Abstracts

Virginia Barak
Major: Biology
Faculty Sponsor: Dr. Carol Fassbinder-Orth
2:30-3:30, Room 3023

Serological Study of Ectoparasite-Specific Immune Responses in Passerine Birds of Western Nebraska

This serological study compares immune responses of native and non-native avian species to a specific arthropod vector and the disease it carries. Immune responses are known to be physiologically costly, and differences between species may contribute to more efficient health maintenance. Increasing our understanding of arthropod-borne diseases and the host-vector-pathogen interactions that precede them can help us to be able to predict the consequences of diseases – who will be most affected and to what level the diseases will be debilitating to those who encounter them. This will have obvious benefits for humans, as well as for livestock and wildlife health.

Peter Bermes
Majors: Political Science, Environmental Science
Faculty Sponsor: Dr. Sue Crawford
2:00-3:00, Room 3023

Green Counties: A Study of Conservation Spending at the County Level

Data on counties from the Iowa State Association of Counties and the Inter-University Consortium for Political and Social Research is used to examine variation in conservation spending at the county level. The study examines whether institutional development, rural classification, or party affiliation affect a county's conservation spending per capita while controlling for total county spending per capita and income per capita. The results indicate that county conservation spending per capita is largely a

function of total county spending per capita, but that party affiliation still significantly affects county conservation spending. Future research should examine a larger and more diverse sample of cases.

Colleen Blosser
Major: French and Francophone Studies
Faculty Sponsor: Dr. David Vanderboegh
3:20-3:45, Room 3028B

Legitimizing the French Vernacular: A Comparative Analysis of Artes Poeticae

The Pléiade, 16th century French poets, established the French vernacular as a worthy literary successor to Latin. Despite their importance in the development of French literature, their influence has been relatively neglected in the last fifty years. My project thus seeks to re-establish the Pléiade as the linchpin in the legitimization of the French vernacular by situating their thought in the tradition of artes poeticae. I analyzed stylistic prescriptions in four such literary manuals: the model ars poetica of Roman writer Horace, those of 16th century poets Thomas Sebillet and Pierre de Ronsard, and 17th century Nicolas Boileau's chef-d'oeuvre in order to measure their subsequent influence.

Erin Bruggeman
Major: Nursing
Faculty Sponsor: Prof. Ali Whittaker
4:10-4:35, Room 3028A

A Retrospective Study to Determine the Significance of Chlorhexidine (CHG) Bathing of Patients with Central Lines

This retrospective study looks at the rate of infection for patients who received a central line within a five-year time frame from August 2006 until August 2011 at Creighton University Medical Center. These dates include about 3 years prior to the initiation of CHG bathing and 2 years after the initiation of CHG bathing. By looking at the total number of central line days and the total number of infections obtained in adult patients, I found that the rate of infection is significantly lower with the use of daily CHG bathing.

Justine Bucy
Major: Psychology
Faculty Sponsor: Dr. Isabelle Cherney
2:30-3:30, Room 3023

Play, Creativity, and Gender Schema Flexibility

In this study, 42 four-year-old participants (n=18 females, n=24 males) were exposed to gender stereotyped or counter-stereotyped vignettes and asked to construct an element of the story with blocks. A toy-sorting task was conducted before and after to evaluate how the vignettes affected each participant's gender schema. Childhood creativity and gender schema flexibility can have important implications for guiding play behaviors at home and in early childhood education programs. The results supported previous research that exposing children to counter-stereotype gender schemas can lead to gender schema flexibility (Green, Bigler, & Catherwood, 2004).

Abstracts

Alan Buttars
Majors: Psychology, Computer Science
Faculty Sponsor: Dr. Isabelle Cherney
3:45-4:10, Room 3027

OutLiars: The Relationship between Political Ideology and Dishonesty

Issues of character are a recurring theme of American presidential politics. Two hundred and five undergraduates (65 males, 140 females, Mean age = 19.19) were given the possibility to be dishonest about their score on an online questionnaire to gain a higher monetary reward. Individuals who reported being at both political extremes (very conservative or very liberal) were significantly more likely to report larger dishonest scores than the moderates, while there were no significant correlations between political ideology and expectations of dishonesty from others.

Erin Cahill
Major: English (British Literature)
Faculty Sponsor: Dr. Bridget Keegan
2:55-3:20, Room 3029

'Sung Reading': An Operatic Approach to P. Craig Russell's Graphic Novel *The Ring of the Nibelung*

I am developing a method of reading a graphic novel as a "performance" by exploring the similarities between graphic novels and opera as storytelling media. My focus is P. Craig Russell's award-winning graphic novel "The Ring of the Nibelung," which is based on the operas by Richard Wagner. I examine the sign systems that an opera uses to tell a story and then compare these systems to similar storytelling techniques in Russell's graphic novel. Through this study I attempt to illustrate the concept of a "storyworld" as a cognitive construct that both transcends and depends on its medium's sign system in order to recreate a story in the reader/viewer's imagination.

Abstracts

Christopher Carlson
Major: Biochemistry
Faculty Sponsor: Dr. Garrett Soukup
3:00-4:00, 3rd Floor Hallway

A Study of the Effects of a Mammalian Riboswitch on Antizyme Gene Expression and the Spermine Biosynthetic Pathway

Previous research has shown the potential for a mammalian riboswitch in the Antizyme gene with dependence on Polyamines in the spermine biological pathway. This was determined using a synthetic construct lacking the natural form of the gene. In order to determine Antizyme's potential as a riboswitch, the gene must be analyzed in its natural context. The gene was constructed and analyzed using a Dual Luciferase Assay and Quantitative Reverse Transcription PCR. The results determined that the natural context of the Antizyme gene does not exhibit greater spermine-dependent regulation, indicating the involvement of other processes. Further exploration of this riboswitch could demonstrate its use as a chemotheraputic.

Patrick Carroll
Major: Biology
Faculty Sponsor: Dr. Devendra Agrawal
2:05-2:30, Room 3027

Differential Localization of Dendritic Cells in Asymptomatic and Symptomatic Human Atherosclerotic Plaques

Dendritic cells are a type of immune cell that play an integral role in the formation of atherosclerotic plaques. The localization pattern and abundance of the two dendritic cell subtypes (myeloid and plasmacytoid) in asymptomatic and symptomatic atherosclerotic environments have yet to be elucidated. Thus, we examined the abundance and localization of dendritic cell subtypes

in asymptomatic, symptomatic, and normal human carotid arteries using immunofluorescence. The localization pattern and abundance of differing dendritic cell subtypes in various atherosclerotic plaque phenotypes will help us better understand how they impact the formation of atherosclerotic plaques that can cause strokes.

Allen Cox
Majors: Chemistry, Computer Science
Faculty Sponsor: Dr. Mark Freitag
3:20-3:45, Room 3028A

Parallelization of General Atomic and Molecular Electronic Structure Systems (GAMESS) to Decrease Computation Execution Time

The parallelization of GAMESS across multiple central processing units (CPUs) will allow for high performance computations of ab initio quantum chemistry. The computations that GAMESS facilitates are usually large, taxing processors with extensive, lengthy computations that can frequently be partitioned. Effective data distribution and parallelization speeds the execution of more complex computations. Using five Mac G5 computers, we created a cluster of 10 CPUs and monitored how performance increased across varying numbers of CPUs. We also considered how memory and network speed affected performance. The Creighton University Physical Chemistry Division will use this cluster to perform queued quantum chemical calculations.

Abstracts

Christopher Culhane
Major: Biology
Faculty Sponsor: Dr. Soochin Cho
3:00-4:00, 3rd Floor Hallway

Acetylation Regulates KSR1 and 14-3-3 Association

The molecular scaffold Kinase Suppressor of Ras 1 (KSR1) mediates the activation of the Raf/MEK/ERK signaling pathway, which has been implicated in the progression and maintenance of several human cancers. Therefore, therapeutic targeting aimed at manipulating this pathway could serve as a basis for cancer treatment. The 14-3-3 family of proteins bind and regulate the function and localization of a number of proteins, including KSR1. Our data indicate that acetylation of 14-3-3 is a novel mechanism by which its association to KSR1 is regulated and provides a prospective therapeutic target to inhibit the activation of the Raf/MEK/ERK kinase cascade.

Halley Faulhaber
Major: Exercise Science
Faculty Sponsor: Dr. Anthony Bull
2:30-3:30, 3rd Floor Hallway

Relationship Between VO2 Max and VO2 Max Estimated from a 1.5 Mile Run in Division I Cross Country Athletes Immediately Following the Completion of the Regular Season

The purpose of this study was to examine the cardio-respiratory function of Division I Cross-Country runners during maximal effort running trials on a treadmill with gas analysis and to compare results from VO2max trials to 1.5 mile timed run on a track and the resulting estimation of VO2max. The results were compared with the ACSM percentile ranks for VO2max to estimate fitness level for the general population and VO2max

values for highly trained athletes. A relationship between the percentile ranks and testing results was determined and analyzed proving the ACSM standards underestimated the fitness levels of highly trained athletes. The norms associated with the 1.5 mile run based on the regression equation also proved to be drastically lower than the actual measured VO2max and thus were shown to underestimate the fitness levels of highly trained athletes.

Sarah Fitzpatrick
Major: Chemistry
Faculty Sponsor: Dr. Mark Freitag
2:00-3:00, Room 3023

The Particle in A Box Model: Ladder Operator Solutions

The purpose of this research is to use a nonstandard approach to find solutions to the infinite well model. In particular, this research seeks ladder operator solutions for the one-dimensional particle-in-a-box system. A thorough understanding of ladder operators as applied to other systems, including that of the harmonic oscillator, provided a foundation for this study. This research uses established solutions as a framework for determining validity of proposed ladder operators. Development of such solutions may result in simpler methods for finding solutions for the particle-in-a-box model, and will provide insight into application of ladder operators to other quantum mechanical systems.

Shannon Frech
Major: English (Creative Writing)
Faculty Sponsor: Prof. Susan Aizenberg
4:10-4:35, Room 3028C

Heirlooms: A Family History in Poetry

Novice writers often hear a simple phrase from their instructors that is supposed to guide them during their formative years: "Write What You Know." There is perhaps nothing we know better than the people who raised us, the people whose blood we might share, the people called our Family. Often, our earliest memories involve the loving care we received as children. Yet, our families remain a source of frustration, of pain, of disease. They are our best and our worst, something we try desperately to outgrow only to truly grow into. This poetry collection explores the unique relationships inherent in Family: what they give us, what they leave behind, what they hide, and what they display proudly.

Michelle Garner
Major: Psychology
Faculty Sponsor: Dr. Jill Brown
3:00-4:00, Room 3023

Cognitive Dissonance and Social Justice

Cognitive dissonance refers to the psychological discomfort experiences when a behavior contradicts a person's beliefs, resulting in a change in attitude in an attempt to reduce that discomfort (Festinger, 1957). This study aims to evaluate the cognitive dissonance experienced by undergraduate students when faced with conflicting evaluations of their own knowledge and value of social justice issues. Students in this study were evaluated on their social justice knowledge and were also asked to self-report

their values. It is predicted that students presented with negative feedback will rate a lower personal value of social justice issues in the post-test.

Wayne Gergens
Major: Biochemistry
Faculty Sponsor: Dr. Martin Hulce
3:00-4:00, Room 3023

Studies in Fluoro-Benzylated Histidine Residues

Calcitonin Gene Related Peptide, or CGRP, is a 37-amino acid peptide that is a potent vasodilator that can function in the transmission of pain, particularly migraines. Previous experimentation has shown an analogue of CGRP consisting of amino acids 8-37 with position 10 replaced with benzylated histidine is a high affinity, competitive antagonist that is selective for human CGRP receptors. This CGRP analogue has pharmaceutical implications to relieve migraines. Current experimentation focuses on studying the effect on receptor binding and synthesis of fluorobenzylated histindes at position 10 in the CGRP analogue.

Shweta Goswami
Major: Biochemistry
Faculty Sponsor: Dr. Julie Soukup
3:00-4:00, Room 3023

The Study of Riboswitches

Riboswitches, which are one type of noncoding RNA sequence, are found in untranslated regions of mRNAs. Many riboswitch RNAs undergo conformational change upon binding to a specific cellular metabolite. We are interested in identifying riboswitches in animals and are investigating the structure and function of a potential riboswitch conserved among a wide variety of species and thought to control polyamine biosynthesis. We hypothesize that the potential riboswitch will bind specifically to ligand and demonstrate conformational change upon ligand binding. We are utilizing equilibrium dialysis in-line probing to properly characterize riboswitches. Our preliminary results indicate that the RNAs from diverse species possess similar binding ability. The identification of riboswitches could be therapeutic targets for modulating gene expression.

Eric Hansen
Majors: Political Science, Spanish and Hispanic Studies
Faculty Sponsor: Dr. Sue Crawford
2:30-2:55, Room 3028B

Gubernatorial Influence in Federal Policy Implementation: Evidence from the Pre-existing Condition Insurance Program (PCIP)

The 2010 Affordable Care Act (ACA) establishes temporary, high-risk insurance pools in each of the 50 states under the Preexisting Condition Insurance Program (PCIP). Using multiple regression statistical analysis, this study seeks to explain the variation in

Abstracts

PCIP enrollment between states, hypothesizing that enrollment will be lower in states led by governors politically opposed to ACA. The data reveals that governors affect enrollment by deciding whether the state or federal government administers PCIP. The results will contribute to an evolving body of political science literature seeking to define the powers of state-level political actors in the federal policy implementation process.

Neil Hassler
Majors: Economics, History
Faculty Sponsor: Dr. John Deskins
2:30-2:55, 3028C

What are the odds? Lotteries and State Revenues

Lotteries have become a very popular means of raising revenue for state governments in the last few decades. Much of the scholarly work has been dedicated to evaluating their impact on their intended beneficiaries, such as public education. However, little work has been done on their net effect on state revenues. This paper seeks to understand to what extent, if any, they supplement or replace those revenues.

Abstracts

Madeline Heck
Major: Medical Anthropology
Faculty Sponsor: Dr. Alex Rodlach
2:00-3:00, 3rd Floor Hallway

The Florence Clinic, Refugee Populations, and Community

Faculty from Creighton University's College of Arts and Sciences, School of Nursing, and School of Medicine proposed a qualitative pilot study to explore the health-related concerns and needs of two refugee populations at Creighton's Florence Clinic. The goals of this study were to 1) better understand the health-related needs and concerns of refugee communities, 2) apply findings to improve existing health services at the clinic, 3) provide interdisciplinary learning opportunities for Creighton student researchers, and 4) disseminate findings at conferences and in journals.

Zac Holmes
Major: Chemistry
Faculty Sponsor: Dr. Julie Soukup
2:55-3:20, Room 3027A

Effect of microRNA-183 Family on Expression of Genes That Reinforce Neurosensory Cell Fate in the Inner Ear

MicroRNAs inhibit gene expression by binding to complementary mRNA by means of a 6 base pair seed sequence. The microRNA-183 family is already known to aid in the development and upkeep of hair cells, mechanosensory cells responsible for translating sound waves to neural impulses, in the inner ear. Because most seed sequences are known, their interactions are highly predictable yet are unvalidated. Through a gene reporter vector, we examined several predicted gene target site interactions of the microRNA -183 family with genes responsible for the development of hair cells.

Abstracts

Anne James
Majors: Biochemistry, French and Francophone Studies
Faculty Sponsors: Dr. Mark Reedy and Dr. Philip Brauer
2:00-3:00, 3rd Floor Hallway

Effect of TIMP-2 on Neural Crest Pathfinding

Failure of proper neural crest (NC) cell formation, migration, proliferation, and differentiation leads to developmental defects. A better understanding of the mechanisms guiding NC pathway choice is necessary for elucidating the etiology of these defects. Previous studies suggest tissue inhibitor of metalloproteinase-2 (TIMP-2) correlates positively with cardiac NC cells taking the dorsolateral pathway. Using chick embryos as a model, we tested whether miss-expression of TIMP-2 in trunk NC cells redirects NC cell migration to the DL pathway. Pathway choice of trunk NC cells was scored and results show that miss-expressing TIMP-2 in early trunk NC cells significantly increases DL migration.

John Kelsey
Major: Biochemistry
Faculty Sponsor: Dr. David Dobberpuhl
2:30-3:30, Room 3023

Pulmonary Gas Exchange During Exercise in Healthy Fit Older Adults

With healthy aging there is a progressive deterioration in the structure and function of the pulmonary circulation. In theory, these age-related changes in the pulmonary circulation could impair pulmonary gas exchange during exercise in older adults. However, despite these changes, healthy fit older adults maintain high arterial oxygen and carbon dioxide levels, even during heavy exercise. It is possible that a maintained metabolic demand in the face of a reduction in ventilatory reserve may limit gas exchange during exercise in these individuals. This project investigates whether gas exchange becomes limited in highly fit older adults during high-intensity exercise.

Abstracts

Patrick Kilcoyne
Majors: Technical Theatre, Performance Theatre
Faculty Sponsor: Prof. Stephen Sheftz
3:45-4:10; Room 3029

Drama Therapy: Theatrical Coursework for Students with Autism

Over the course of the last year, I have studied drama therapy and its use for students diagnosed on the autism spectrum while also teaching drama courses for these students as well as observing similar courses taught by others on a regular basis. Many skills emphasized in theatre double as social skills. By comparing textual studies to what I have seen implemented, I choose the educational techniques that I feel are most important within the field of drama therapy. The results of these studies have been compiled into a lesson plan that balances theatre work with creative devising, team-building, and craft work which offers variety without losing stability for the students. It has also become apparent that word choice is crucial within drama therapy; examples of phrasing are included alongside the lesson plan itself.

Matthew Kor
Majors: Chemistry, Medical Anthropology
Faculty Sponsor: Dr. Eric Haas
2:00-3:00, Room 3023

Biological Indicators of Immune Response in Two Insects

We aim to elucidate the role of eicosanoids in cellular immunity in the squash bug, *Anasa tristis*. We assayed the immunosponses of the insects to bacterial challenge by the pathogen *Serratia marcescens* through documentation of hemocyte proliferation, microaggreagate formation, and nodulation and later comparison with the control insects' immunoresponses. We also injected challenged insects with indomethacin, an inhibitor of eicosanoid

biosynthesis, to document changes in the immunoresponse. Furthermore, we assayed the immunoresponses of spined soldier bugs, *Podisus maculiventris*, because of the different active seasons of the two types of insects. Lower values of hemocyte proliferation, microaggreagate formation, and nodulation occurred in control bugs versus challenged bugs. However, challenged bugs injected with indomethacin resulted in lower values versus control bugs.

Jack Kostal
Major: Psychology
Faculty Sponsor: Dr. Isabelle Cherney
2:55-3:20, Room 3027

Performance Under Pressure: Stereotype Threat, Achievement Motive, and Locus of Control

This study investigated the relationships amongst achievement motive, locus of control, stereotype threat, and academic performance. Threat occurs when individuals performing in stigmatized domains recognize and become apprehensive of stereotypes, harming performance. The sample consisted of 101 Creighton students (39 male, 62 female) who were divided into stereotype threat and no-threat conditions. Participants completed measures of relevant variables as part of a research survey, with the threat induced via a written prompt. The results indicated that locus of control and achievement motive both correlated with academic performance, while stereotype threat moderated the effects of motivation on performance. These findings are interpreted in light of contemporary models of achievement motive and stereotype threat, and a novel integration of two models is proposed.

Kevin Lee
Majors: Classical and Near Eastern Studies, Art History
Faculty Sponsor: Dr. Erin W. Averett
2:05-2:30; Room 3028A

The Evolution of the Etruscan City: A Theoretical Approach

Whereas previous scholarship sought to understand the Etruscan civilization in Italy in light of its tombs, recent excavations of Etruscan cities and public spaces are leading to a more comprehensive view of this culture. This provides a perfect opportunity to develop a theory of Etruscan urbanism, a neglected aspect of this culture. This project analyzes the archaeological evidence from Etruscan sites in light of modern theories of urbanism to build a diachronic model of the Etruscan city. It explores how the Etruscans conceived of the city and how its social, physical, and political layout changed from the beginning of Etruscan civilization in the 10th-9th centuries B.C. to its complete absorption by Rome c. 100 B.C.

Timothy Malouff
Major: Biology
Faculty Sponsor: Dr. Laura Hansen
3:20-3:45, Room 3028C

Genetic Deletion of EGFR Results in Resistance to Cyclophosphamide-induced Alopecia

Treatment of cancer patients with cyclophosphamide, a chemotherapeutic drug, causes hair loss as a result of premature catagen. Because the epidermal growth factor receptor (EGFR) signals hair follicles to enter catagen, we hypothesized that EGFR was necessary for hair loss. Dorsal skin from *EGFR* mutant and control mice was analyzed following cyclophosphamide administration. As expected, control mice treated with cyclophosphamide experienced hair loss, while the *EGFR* mutant

mice were resistant to hair loss. There was less apoptosis and fewer p-53 positive cells in the follicles of *EGFR* mutant mice following cyclophosphamide when compared to the controls. This data reveals that EGFR was necessary for catagen progression and hair loss in response to cyclophosphamide through a p53-dependent apoptotic mechanism.

Brenden Mar
Major: Biochemistry
Faculty Sponsor: Dr. Erin Gross
3:00-4:00, 3rd Floor Hallway

Development and Characterization of a Microfluidic On-Chip Reference Electrode

Current microfluidic devices are hybrids of microfluidic chips and macro-components. My project was to develop a suitable on-chip reference electrode to replace the larger commercial Ag/AgCl reference electrodes currently used. The performance of the electrode was characterized with cyclic voltammetry and electrochemiluminescent detection. The reference electrode will ultimately be used for microchip electrochemiluminescent detection of clinically and environmentally relevant analytes. This technology holds the promise to eventually be used to produce a small, portable instrument that can detect and measure analyte concentrations while only requiring a very small sample size.

Abstracts

Nathan Messbarger
Major: Chemistry
Faculty Sponsor: Dr. Stephen Gross
2:00-3:00, Room 3023

Encapsulation of Lysozyme for use in a Model Reverse Thermal Drug Delivery System

The objective of this study was to evaluate the use of polyurethane microcapsules as a potential means of drug delivery in a subcutaneous gel system. Initially, control microcapsules using ethylene glycol were synthesized to encapsulate a phosphate buffer solution. Next, microcapsules were synthesized containing the protein lysozyme (a drug mimic). The permeability of the control microcapsules was determined. It was demonstrated that the microcapsules containing lysozyme can store the mimic without permeation. Current work is focused on synthesizing microcapsules with poly(ethylene glycol) based walls that could allow for controlled release of a drug from mediums such as subcutaneous gels.

Anne Mirich
Major: Chemistry
Faculty Sponsor: Dr. Bruce Mattson
2:55-3:20, Room 3028

Palladium Catalyzed Deuteration of 1-butene Using the Gas Reaction Catalyst Tube

We have studied the gas-phase deuteration of 1-butene with deuterium gas over a palladium-coated ceramic support. The reaction proceeds by several cycles of deuterium-hydrogen exchange followed by elimination of polydeuterated butane. The extent of deuteration can be estimated by modeling the proplyl fragments produced in the mass spectrum and is found to be about 6-8% and 27-29% for the two proplyl fragments produced for the host of deuterobutanes. NMR indicates that butane production exceeds

90% and unreacted 1-butene is not deuterated. Increasing the amount of deuterium increases the amount of unreacted 1-butene, suggesting that deuterium preferentially binds to the palladium.

Madeline Novoa
Major: Exercise Science
Faculty Sponsor: Dr. G. Patrick Lambert
2:30-3:30, 3rd Floor Hallway

Effect of Acute Aspirin Ingestion on Urinary D-Lactate Concentration

D-lactate is produced by bacteria in the gastrointestinal (GI) tract and does not normally enter the circulation. However, damage to the GI mucosa can cause D-lactate to enter the blood, which can then be detected in the urine. Thus, urinary D-lactate may be a marker of GI mucosal damage. It is known that aspirin causes GI mucosal damage. The aim of our study was to determine if aspirin increases D-lactate in the urine. The results indicated that D-lactate did not increase with acute aspirin use and, therefore, it may not be a valid marker of GI damage under these conditions.

Ben Paul
Major: Mathematics
Faculty Sponsor: Dr. Mike Nichols
2:30-3:30, 3rd Floor Hallway

Digital Holography at 1064 nanometers

We have developed a holographic microscope that incorporates a Mach-Zehnder interferometer to capture the light interference pattern that develops when a laser passes through a cell. By analyzing this pattern we can measure the cell's index of refraction. Through many trials we calculate the variance of the index among cells, which can provide essential information for biomechanical measurements of living cells made with the optical stretcher, a dual beam laser trap. Specifically, the stretcher allows us to investigate the role bone cell elasticity plays in the regulation of bone mass, which when interrupted may develop into osteoporosis.

Rob Placek
Majors: International Relations, Political Science
Faculty Sponsors: Dr. Graham Ramsden and Dr. Scott Hendrickson
2:00-3:00, 3rd Floor Hallway

Canadians of a Different Color: Analyzing Nativism in Modern Canadian Voters

In this study, I apply demographic analysis to study the symbolic attitude of nativism, or the concept of native superiority over newcomers in Anglophone Canada. Just as common individual demographics are used to analyze values such as ideology, party preference, or racial prejudice, so can demographics be transferred to nativism in assessing symbolic racism. After exploring Canadian national and cultural background and differentiating nativism from racism and nationalism, I will analyze how nativist attitudes are affected by variables such as age and political conservatism, hometown population, income and education levels in the Anglophone Canadian voter.

Abstracts

Donald Schrack
Major: Biochemistry
Faculty Sponsor: Dr. Julie Soukup
3:00-4:00, Room 3023

Structural Characterization and Analysis of Pre-Queuosine1-II Riboswitch

Riboswitches are segments of the 5'-untranslated region of bacterial mRNAs that bind specific ligands, undergo conformational change, and as a result regulate gene expression. In this way, riboswitches act as genetic switches that control many key processes occurring in bacterial cells. This project aims to elucidate the structural characteristics of the pre-queuosine riboswitch to aid the future design of possible antibiotics that target the riboswitch and cause inhibition of these essential bacterial pathways. Using purified RNA, a number of chemical conditions have been tested in order to optimize the crystallization of the riboswitch. This project focuses on the continued testing of various chemical conditions in order to crystallize the riboswitch and obtain structural details of how the riboswitch interacts with its ligand on an atomic level.

Margaret Sciallis
Major: Theology (Biblical Studies)
Faculty Sponsor: Dr. Ronald Simkins
2:05-2:30, Room 3028

Canaanite Myth and Christian Eschatology

The purpose of this paper is to demonstrate the continuity in eschatological thought from Canaanites to Israelites to Christians. To accomplish this I will use primary text examples of Canaanite myth and relate these eschatological themes to those found in Christianity. This paper will then assert the relevance of studying Canaanite religion as it pertains to Christian theology.

Abstracts

Lauren Shoemaker
Majors: Biology, Spanish and Hispanic Studies
Faculty Sponsor: Dr. Dustin Stairs
3:00-4:00, Room 3023

Effects of Caffeine in an Ethanol Solution on Ethanol Drinking in a Two-Bottle Choice Procedure in Rats

The present study examined the effects of caffeine in combination with ethanol on altering oral consumption of ethanol across a number of ethanol doses. Combining caffeine with ethanol appears to increase the consumption of ethanol. These results indicate that caffeine when combined with alcohol may increase the abuse of alcohol. This study also looks at the effects of the drug Naltrexone on the consumption of ethanol when combined with caffeine. This provides some understanding into the dangerous consequences of recently popular caffeinated alcoholic beverages like Four Loko.

Meghan Smith
Major: Biochemistry
Faculty Sponsor: Dr. Karin van Dijk
4:10-4:35, Room 3028B

Interactions of HopV1 in a Type Three Secretion System

Type three secretion systems are needle-like projections found in Gram-negative bacteria. They allow the bacteria to first detect possible host cells, and second infect these cells by allowing a pathway to the inside of the host cells where effector proteins can travel and cause infection. It is important to understand the specific mechanism these bacteria use to cause infection, as this will aid in our ability to prevent and treat incidences of infection.
This project looks specifically at effector protein HopV1. We firt characterize it's ability to suppress host immunity, then qualify interactions with other proteins. This includes the chaperone ShcV, a chaperone protein we believe to aid in translocation of HopV1.

Abstracts

Robert Steininger
Major: Biology
Faculty Sponsor: Dr. Devendra Agrawal
3:00-4:00, Room 3023

Effect of Vitamin D Deficiency on the Distribution of Immune Cells in the Airway of Vitamin D Deficient Swine Model

Vitamin D deficiency is associated with susceptibility to inflammatory diseases including asthma. However, its influence on immune cell distribution remains unknown. Determining the effects of Vitamin D deficiency on immune cell distribution in a non-sensitized airway is critical to understanding the consequence of Vitamin D deficiency following antigen exposure. In this study, I have determined the distribution patterns of antigen presenting cells and lymphocytes in the bronchi of normal and Vitamin D deficient swine groups. My results show that there is an increase in number and a change in the distribution pattern of immune cells in the Vitamin D deficient group relative to the normal group. These changes may contribute to the aberrant immune response seen in inflammatory diseases.

Jennifer Suleiman
Major: Biochemistry
Faculty Sponsor: Dr. Eric Haas
2:30-3:30, 3rd Floor Hallway

Exploring the Mating Behaviors of Nebraska and Oklahoma Squash Bugs

The purpose of this research project is to explore the role of icocynoides in mating behaviors of squash bugs. Specifically focusing on the how various inhibitors of icocynoides affect the behavior of the Nebraska and Oklahoma squash bugs. Observing the mating ritual of these insects before and after injection can help us understand how these bugs mate, what can alter their mating ritual, and how those changes may affect the squash bugs' biochemical composition.

Abstracts

Elizabeth Timberlake
Major: Psychology
Faculty Sponsor: Dr. Roxana Recio
3:00-4:00, 3rd Floor Hallway

The Relevant Role of Monasteries in the Creation of European Culture

Monasteries in Europe were what cultivated and preserved the western culture. Manuscripts were written in Latin so that they could keep the culture alive. Nevertheless, they were also imposing the vernacular languages and the manuscripts in those tongues. The monks that knew Latin perfectly were the ones who realized the importance of the vernacular languages. Languages such as Spanish, Italian, or French owe thanks to the monks and the medieval religions that were prominent at the time. The monasteries were centers for preservation of the culture and it is precisely because of them that the western culture is so important since maintaining it was their life.

Ryan Wiggins
Majors: Psychology, Business Administration
Faculty Sponsor: Dr. Matthew Huss
2:30-3:30, Room 3023

Psychosexual History Comparison Between Intrafamilial and Extrafamilial Child Sex Offenders

The project focused on differences in the responses of intra and extrafamilial child sex offenders on psychosexual history forms and polygraphs. Specifically, analyses were run to discover differences that could provide clues concerning why individuals become extrafamilial as opposed to intrafamilial sex offenders. Data was collected at an Iowa Residential Correctional Facility by correctional staff, and entered into a SPSS database after the

data was transferred to a coding form. This project identified experiences during the psychosexual history of the offenders as possible indicators of their future behavior, allowing consequent research to be more specific, possibly affecting treatment and sentencing.

Angelica Woo
Major: Biology
Faculty Sponsor: Dr. Soochin Cho
2:00-3:00, 3rd Floor Hallway

Characterization and Expression of Simulium vittatum (black fly) Silk Genes: An Examination of Silk Genetics and Evolution

Black flies are notorious harmful biting pests and major transmitters of the devastating parasite Onchocerca volvulus, which causes River Blindness. However, black fly larvae also possess a key role in aquatic environments. Black fly survival is dependent on the ability to produce aquatic silk. Despite the importance of silk in the black fly lifecycle, black fly silk genetics is currently not well studied. Through this research, we aim to elucidate black fly silk genetics through the cloning, expression, and characterization of the black fly silk genes. Ultimately, understanding black fly silk genetics harbors biological, industrial, and biomedical promise.

Abstracts

Katie Young
Majors: English (Creative Writing), Graphic Design
Faculty Sponsor: Dr. Greg Zacharias
3:45-4:10, Room 3028

"Drawing" Conclusions: Visual Representation of Theme Using Elements and Principles of Design

Design is the deliberate and subtle use of line, shape, color, harmony, and contrast to visually communicate a concept to the viewer. For centuries, design has used these elements and principles in typography, illustration, and in the creation of symbols to (literally) draw meaning from text. Here, I use the elements and principles of design to illustrate and magnify the themes of a self-authored collection of short stories entitled "A Beast Within." Working in the typographic tradition of the Swiss International Style and using the simplistic, abstract illustration style of the Beggarstaff Brothers, my project captures—through design—the solutions devised by characters when society, circumstance, and self overwhelm the human spirit.

Master Presentation Schedule

Time	Type	Presenter	Room #
3:45pm	Oral Pres.	Alan Buttars	3027
3:20pm	Oral Pres.	Allen Cox	3028A
2:00pm	Poster	Angelica Woo	3rd Floor Hallway
2:00pm	Poster	Anne James	3rd Floor Hallway
2:55pm	Oral Pres.	Anne Mirich	3028
3:00pm	Poster	Aunum Akhter	3rd Floor Hallway
2:30pm	Poster	Ben Paul	3rd Floor Hallway
3:00pm	Poster	Brenden Mar	3rd Floor Hallway
3:00pm	Poster	Christopher Carlson	3rd Floor Hallway
3:00pm	Poster	Christopher Culhane	3rd Floor Hallway
3:20pm	Oral Pres.	Colleen Blosser	3028B
2:30pm	Oral Pres.	David Austerberry	3029
3:00pm	Poster	Donald Schrack	3023
3:00pm	Poster	Elizabeth Timberlake	3rd Floor Hallway
2:30pm	Oral Pres.	Eric Hansen	3028B
4:10pm	Oral Pres.	Erin Bruggeman	3028A
2:55pm	Oral Pres.	Erin Cahill	3029
2:30pm	Poster	Halley Faulhaber	3rd Floor Hallway
2:55pm	Oral Pres.	Jack Kostal	3027
2:30pm	Poster	Jennifer Suleiman	3rd Floor Hallway
2:30pm	Poster	John Kelsey	3023
2:30pm	Poster	Justine Bucy	3023
3:45pm	Oral Pres.	Katie Young	3028
2:05pm	Oral Pres.	Kevin Lee	3028A

Master Presentation Schedule

Time	Type	Presenter	Room #
3:00pm	Poster	Lauren Shoemaker	3023
2:00pm	Poster	Madeline Heck	3rd Floor Hallway
2:30pm	Poster	Madeline Novoa	3rd Floor Hallway
2:05pm	Oral Pres.	Margaret Sciallis	3028
2:00pm	Poster	Matthew Kor	3023
4:10pm	Oral Pres.	Meghan Smith	3028B
3:00pm	Poster	Michelle Garner	3023
2:00pm	Poster	Nathan Messbarger	3023
2:30pm	Oral Pres.	Neil Hassler	3028C
2:05pm	Oral Pres.	Patrick Carroll	3027
3:45pm	Oral Pres.	Patrick Kilcoyne	3029
2:00pm	Poster	Peter Bermes	3023
2:00pm	Poster	Rob Placek	3rd Floor Hallway
3:00pm	Poster	Robert Steininger	3023
2:30pm	Poster	Ryan Wiggins	3023
2:00pm	Poster	Sarah Fitzpatrick	3023
4:10pm	Oral Pres.	Shannon Frech	3028C
3:00pm	Poster	Shweta Goswami	3023
3:20pm	Oral Pres.	Timothy Malouff	3028C
2:30pm	Poster	Virginia Barak	3023
3:00pm	Poster	Wayne Gergens	3023
2:55pm	Oral Pres.	Zac Holmes	3027A
4:30pm		**Administrators' Remarks and Presentation of Awards**	**3023**

About the Honors Program

Honors Program Mission Statement

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

The program is designed for talented imaginative students desirous of participation in small, discussion-oriented classes and in courses on interdisciplinary and topical issues. It provides students with special opportunities and challenges to enhance their undergraduate experience and to contribute to the intellectual and cultural life of the University. The program also offers eligible students the opportunity to pursue a course of study that complements her or his major.

Criteria for admission to the Honors Program include academic achievement and demonstrable interest in the program's aims and aspirations. Required application materials include an activities resume and two essays.

About the Honors Program

Honors Program Directors

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About the Honors Program

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Dr. Eileen Wirth
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Dr. Greg Zacharias
Department of English

Student Members

Emmett O'Keefe
Joe Maschman

About the Honors Program

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Anne Mirich
Anthony Schilling

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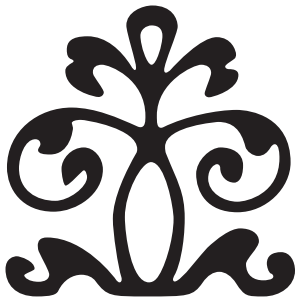
Cameron Kieffer
Karen Vanderzanden

Senior Class Reps
Chris Culhane
Shannon Frech
Ben Paul



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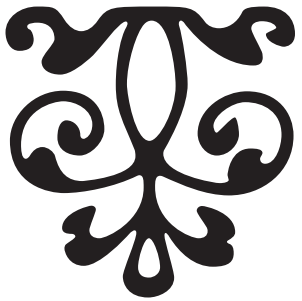

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