The Honors Program Symposium

Sunday, April 25, 2010
2:00 p.m.
Ceddia Union Building Lounges
Program

Welcome .................................................. Dr. Kim Klein
Director, Honors Program

Opening Remarks ................................. .Dr. William Ruud
President, Shippensburg University

Student Presentations:

Panel 1 .................................................. CUB Lounges
Catherine Putz, Katelyn Moore, Tiffany Frazier,
Kristen Beddia, Paul Rutledge

Panel 2 .................................................. CUB 216
Keri Kimes, Jessica Barben, Anthony Comegna,
Kara Bushman, JohnPaul Bennett

Panel 3 .................................................. CUB 217
Todd Vargson, Brittney Miller, Diana Schneider,
Nitasha Kaur and Ashley Martin, Kevin McCrabb

The research and professional projects our seniors are presenting at
today’s symposium are their capstone projects in the Honors Program
and the culmination of their work as Honors students at Shippensburg
University. Thank you for joining us to learn about their studies and
acknowledge their hard work!

Catherine Putz, History Major/Political Science Minor
Faculty Mentor: Dr. Catherine Clay

The Afghan Mujahedin are often viewed as a blip in history between the Soviet occu-
pation of the 1980s and Taliban rule of the late 1990s. Though the Mujahedin were
troubled and temporary rulers, they do constitute a legitimate regime. By tracing
their development from the withdrawal of the Soviet Union in 1989 to their rise to
power in 1991 and finally to their collapse under the tide of Taliban influence, we
can see that disunity was an endemic problem. In the following years, the outside
world has forgotten the Mujahedin, instead focusing on the Taliban’s radicalism or
the scars of Soviet domination. The Mujahedin remain a vital piece of the puzzle that
is Afghanistan.

Diana Schneider, Elementary Education Major
“Teaching Mathematics to Students with Various Learning Styles”
Faculty Mentors: Dr. Rebecca Ward and Prof. Shannon Rudy

The purpose of this study was to research the effectiveness of presenting mathematics
through various approaches to meet the needs of all learners. A unit about telling
time was presented to 1st graders, accommodating the various learning styles in the
classroom. A pre-assessment was used to determine the students’ prior knowledge on
the topic. A post-assessment was then used to evaluate their comprehension of the
material presented in the unit. The data collected showed that students successfully
learned the content and skills through adapting instruction to the various learning
styles.

Todd Vargson, Chemistry Major
“Quantitation of Fluorinated Fungicides by Relaxation Assisted Fluorine-19 NMR”
Faculty Mentor: Dr. Dan Predecki

Various fluorinated fungicides were analyzed by $^{19}$F NMR using a JEOL 400 MHz
spectrometer equipped with a standard, broadband probe. Characteristic peaks and
calibration curves were determined for fludioxonil, quinoxyfen, and tolyfluanid fun-
gicides. Mixed samples were also prepared and quantitated. The next step is to quan-
titate the fungicides on consumer stage produce in order to determine the amount of
each consumed by the typical person.
Brittney Miller, Political Science Major/International Studies Minor  
“Political Rights Freedom and the Influence It Has on Quality of Life”  
Faculty Mentor: Dr. Cynthia Botteron

The purpose of this study is to determine if quality of life increases when political rights freedoms in a country increase. The cause of this is hypothesized that greater political rights freedoms, such as freedom of the press, allow the citizenry to be heard and press for the changes that they feel would better the country. To determine if an increase in political rights freedoms does increase quality of life, correlations and regression of 177 countries using variables representing the two concepts were tested. If the correlations and regressions prove that a significant and positive relationship is present between quality of life and political rights freedom, a follow-up test will be run to see if increased freedom of the press correlates to an increase in political rights freedom. This research shows whether citizens have more opportunity to increase their quality of life by pushing for changes when they are able to be heard.

Katelyn Moore, Chemistry Major  
“Protection from Oxidation-Induced Cell Death by the Antioxidant Glutathione”  
Faculty Mentor: Dr. Thomas Frielle

Reactive oxygen species (ROS), such as hydrogen peroxide (H2O2), are a consequence of both normal metabolism and exogenous sources. Fortunately, cells possess mechanisms that inactivate ROS. Glutathione (GSH), γ-glutamylcysteinylglycine, is a necessary component in the cellular mechanism responsible for the removal of ROS from cells. ROS-induced cellular damage and death have been implicated in cardiovascular disease, neurodegenerative disorders, chronic lung disease, vulnerability to viral infections, and kwashiorkor, a wasting disease common in malnourished third-world societies. It is unknown whether ROS-induced cell death is due to apoptosis, autophagy, or necrosis. An apoptotic cell will display DNA fragments roughly 180 to 200 base pairs in length due to nuclear chromatin condensation and degradation. An assay that separates fragmented DNA from high molecular weight DNA was used to determine if ROS induces apoptosis or cell death that can be attributed to autophagy or necrosis.
Kara Bushman, Geoenvironmental Studies Major  
“Morphologic Landmark Analysis and Glabellar Fenestrae Count of North American Cryptolithus Trilobites”  
Faculty Mentor: Dr. Sean Cornell

Cryptolithid trilobites are known from the late Ordovician of North America. The increase in the number of glabellar pit arcs is not well understood. The appearance of cryptolithids are clearly tied to sea level fluctuation and/or tectonic-induced subsidence; the introduction of coarser sediments during certain mountain building events may have played a role in the evolution of increased numbers of fringe pits. This remains to be tested. In this preliminary study, we are using landmark analysis and a computer software package (tpsDig) to quantify morphologic changes through time and study fringe pits from various stratigraphic intervals in New York, Kentucky, and Pennsylvania to see if increased sedimentation and grain size contributed to morphologic change. We have had to develop a new identification scheme to identify specimens, and may have discovered a new way to classify sub-species that were previously identified as members of the same species.

Anthony Comegna, History Major/Philosophy Minor  
“William Leggett and the Locofoco Paradigm”  
Faculty Mentor: Dr. John Quist

My research focuses on William Leggett, Jacksonian editor of the New York Evening Post. In the project, Leggett’s laissez-faire, antislavery thought is investigated within the context of Jacksonian America. Critiquing several of the dominant historiographical interpretations of Leggett, I depict him as a laissez-faire, antislavery radical not fitting comfortably into the Democrat or Whig mainstreams, but rather virtually creating his own paradigm: the “Locofoco” paradigm. Leggett’s political economy became the driving theoretical movement behind the Van Buren administration and, eventually, the Free Soil Party. I find the true significance of William Leggett in the fact that his paradigm was specifically chosen against when the Democratic Party nominated James K. Polk to the presidential race over Van Buren in 1844, causing the party to rupture between pro-slavery and anti-slavery Democrats.

Tiffany Frazier, Elementary Education Major/Theatre Minor  
“You’re So Dramatic: Using Readers’ Theatre in the Classroom to Increase Student Reading Comprehension”  
Faculty Mentor: Dr. Lynn Baynum

The purpose of this research project was to determine whether using readers’ theatre in the classroom increased student reading comprehension of written works. To determine this, I worked with a group of three students on creating a readers’ theatre scene from a book they had read in guided reading. Using QAR (Question and Answer Relationships), I studied the comprehension levels of the students. According to my findings and my observations of the students, I have discovered that readers’ theatre does indeed show an increased reading comprehension of works that students have read, while also being a fun and easy teaching tool that students enjoy.

Nitasha Kaur, Biology Major, and Ashley Martin, Biology Major/Biochemistry Minor  
“Role of Atg5 on Kinetics of Expression of Autophagy-Related Genes in Adherent Glioma Cells”  
Faculty Mentor: Dr. Lucinda Elliott

Autophagy is a cellular process that involves recycling organelles and cytosol macromolecules in response to cellular stress. Autophagy has also been implicated in various differentiation pathways, processing of pathogens, cell survival, and neurodegenerative diseases. Further, it may represent an alternative mechanism of programmed cell death and tumor suppression. It is regulated by multiple Atg genes and involves wrapping cytoplasm contents in double membrane vesicles, autophagosomes, for targeting to lysosomes. Previous studies in our lab demonstrated that Atg 5, which is critical for autophagosome formation, is mutated and not functional in SNB19 glioma cells (SNB19M). In this study, we used RT-PCR to compare the expression of autophagy proteins, Atg5, Beclin, LC3, Atg 12, and Atg 13 in SNB19M and SNB19 cells expressing functional Atg5 (SNB19N) under conditions that stimulate autophagy. The data indicate that the expression of functional Atg5 shifts the kinetic pattern of expression of all Atg genes investigated in this study.

Keri Kimes, Chemistry Major/Biochemistry Minor  
Faculty Mentor: Dr. Leslie Sombers (North Carolina State University)

Hydrogen peroxide is a common byproduct in many biology processes and is potentially toxic. It has been implicated as a major contributor to DNA mutation, lipid membrane disruption, and Parkinson’s disease. Traditionally, platinum electrodes are used to detect hydrogen peroxide because they offer a catalytic surface for H2O2 oxidation, yielding a more reactive surface with better sensitivity; however, they biofoul in vivo. Carbon microelectrodes are most commonly used in vivo but have poor H2O2 detection. In this work, platinum wire, carbon fiber, and platinized carbon fiber microelectrodes were compared in their sensitivity for the detection of H2O2 by fast scan cyclic voltammetry. Platinized carbon fiber electrodes showed a sevenfold improvement in sensitivity over both platinum wire and carbon fiber microelectrodes for detection of H2O2. The increased sensitivity to H2O2 at platinized carbon microelectrodes may offer a medium between better sensitivity in vivo and increased resistance to biofouling.

Kevin McCrabb, Political Science Major  
“People Involved Equally: Working with the Disabled Community in Shippensburg”  
Faculty Mentor: Dr. Allison Carey

People Involved Equally is a club on Shippensburg University’s campus that I started last year with the help of Lauren Kelly, members of the community, Shippensburg University staff, Dr. Allison Carey, and Dr. Cheryl Zaccagnini. The club exists to