

## HOW TO WRITE AN ABSTRACT

An abstract is a short summary (i.e. briefly presents your objective, methods, results, and conclusions) of the research or creative work you have completed. It is one component of a research paper and is typically what one submits when presenting at a conference or research meeting.

Although an abstract is usually the first description of your research someone reads or the first part of a research paper, it should be written last. You need to have completed all other sections before you can select and summarize the essential information from those sections. Well-written abstracts make readers want to learn more about your research!

The basic components of an abstract in any discipline are as follows:

- 1) Motivation/problem statement:** Why should we care about the problem? What practical, scientific, theoretical or artistic gap is your research filling?
- 2) Methods/procedure/approach:** What did you actually do to get your results? (e.g. analyzed 3 novels, completed a series of 5 oil paintings, interviewed 17 students).
- 3) Results/findings/product:** As a result of completing the above procedure, what did you learn/invent/create?
- 4) Conclusion/implications:** What are the larger implications of your findings, especially for the problem/gap identified in Step 1?

Abstracts and the attention paid to each of these areas vary by discipline, but most good abstracts contain each of these components. Your research mentor will have a good understanding of proper protocol for your discipline. Below are sample abstracts; you are encouraged to find abstracts on subjects similar to your work.

Please contact Kirsten Gabriel at [kkgabriel@viterbo.edu](mailto:kkgabriel@viterbo.edu) if you have questions.

# **SAMPLE ABSTRACTS FROM THE 2010 SEVEN RIVERS UNDERGRADUATE RESEARCH SYMPOSIUM**

## **Inhibition of Template-Assisted Hemolysis via Negative Design**

Andrew Devilbiss\*, Jacob Mahoney\*, Sarah Schreiner\*, Aric Opdahl, Todd Weaver  
University Wisconsin-La Crosse

Hemolysin A (HpmA) from *Proteus mirabilis* belongs to the two-partner secretion (TPS) pathway. TPS pathways provide an energy-independent mechanism for virulence factor production and harbor both A and B-components. The beta barrel shaped B-component, located within the outer membrane, secretes and activates its cognate exoprotein A-component. Adhesions and hemolysins comprise two types of A-component virulence factors. Recently, a truncated form of hemolysin A (HpmA265) was characterized structurally and kinetically. These investigations report that HpmA265, a classic TPS A-component, harbors a right-handed parallel beta-helix structure, forms a dry, dimeric interface, facilitates uni-directional and cooperative template-assisted hemolysis, and displays extreme thermal stability. From these initial investigations we sought to investigate the role of the carboxy-terminal dry, dimeric interface during template-assisted hemolysis. The sterically compatible and dry dimer interface forms via hydrogen bonds shared between exposed on-edge beta strands from adjacent monomers. The resultant dimer extends to a fiber-like appearance. Interestingly, carboxy-terminal dry interfaces, extreme thermal stability, beta-helix structure and template-assisted activity are all hallmark features of beta-amyloid type diseases like Alzheimer's and chronic wasting. A series of site-directed mutants were engineered at the exposed beta edge of HpmA265, where a positively charged lysine was used to replace the hydrophobic residues: F241, M245, and L263. The resultant mutants have been termed F241K, M245K, and L263K. The incorporation of a charged group at the exposed beta edge follows well described negative design theories suited to protect the cell from spontaneous and deleterious protein aggregation. The mutants were characterized via template-assisted hemolysis, circular dichroism, and temperature stability. The results indicate that positive charge incorporation at the exposed beta edge inhibits activity and eliminates the beta signal observed with circular dichroism. The results are suggestive of an evolutionary model where exposed beta edges are used to facilitate energy independent assemble of bacterial virulence factors like HpmA.

## **Elizabeth I as Faith: Spenser's Flattery in The Faerie Queene**

Kyle Jennings\*, Susan Cosby Ronnenberg  
Viterbo University

My research is focused on the various representations of Queen Elizabeth I in Edmund Spenser's *The Faerie Queene*. As a writer during the Elizabethan Renaissance, Spenser had to make certain to favor the queen in his writing to ensure his personal and political wellbeing. I examine the various ways in which Spenser creates flattering characterizations of the queen in his work. My work focuses on only Book 1 of the lengthy poem and specifically examines the character of Una and her representation of the Truth or True Religion, which in Spenser's time and political climate, would have been the Church of England and in turn Elizabeth herself, as the queen was the head of the church. Through Una's adventures in Book I, Spenser demonstrates his political and religious allegiance to Elizabeth. I demonstrate this by highlighting a few of the encounters that Una has, including her meeting with Error, where she saves Redcrosse Knight, a wandering Christian, from destruction. Along her way, Una also meets characters that challenge her purity of faith. Abessa and Corceca represent elements of the Catholic Church, which I argue that Spenser would have wanted to discredit. I also address the contrast between Una and Duessa as being another important aspect of Spenser's loyalty to his queen. I address the separate representations that Una and Duessa create and the inverted criticism of the Catholic Church that the descriptions of Una and

Duessa provide. Throughout my paper I demonstrate how these elements represent some aspect of Queen Elizabeth and serve to ground Spenser's anti-Catholic, pro-Church of England message in support of his queen.

### **Say What? Using a Dictionary to Demonstrate Word Diversity in Academic Settings**

Rebecca Jorgensen\*, (*Name of Mentor*)  
Viterbo University

The English language is one of the most commonly used language throughout the world. This could be due to the flexibility of both the syntax and lexicon of the language and this flexibility allows creativity in word formation and use. This creativity allows for more creative expression of feelings and ideas but can also lead to some barriers in communication in the form of misunderstandings or miscomprehension. Also because of the diversity of the English language, it varies in word usage and syntax through many conditions: location, age-group, gender, subculture, setting, etc. This dictionary was made in attempt to illustrate both the creativity in the English language and the potential for misunderstandings and miscommunications because of multiple meanings. The setting chosen was the Natural Science department and words included in the dictionary were those commonly used in the science setting. This dictionary also shows how different groups can use English differently, and though the language is the same, it can be used in totally different ways. Those who are not part of the science department probably do not understand some of the terms and sayings used in the science department. This dictionary can also help those individuals who are either new to the science department or who know individuals in the science department can better understand terms used by upperclassmen and those familiar with the department. Implications include making dictionaries for other subgroups in an academic setting and this poster outlines how this was done.

### **Resilience, Relationships, and Recovery**

Hailey Karls-Lange\*, Valerie Kokott-Rebahn, Debra Murray  
Viterbo University

The field of addiction treatment is constantly changing (Doweiko, 2006). Given the emerging theories about women in recovery (Miller & Stiver, 1997) and resiliency theories (Werner & Smith, 2001), connections between resiliency and relationships requires further investigation. The role that resiliency and relationships play during recovery from substance use disorders is an important area to explore. In this pilot study, five women in recovery from substance use disorders took part in a structured interview process which contained both qualitative and quantitative components. Each participant's level of resilience, the relationships held throughout the lifespan, and their recovery process was explored. The qualitative components of the study included in-depth interviews following Josselson's (1996) Relational Space Maps and Werner & Smith's (1992) 31/32 Year Follow-Up Interview. The quantitative components were Rosenberg's Self-Esteem Scale, the Viterbo Serenity Scale (2009), and the Resilience Scale for Adults. This oral presentation will: 1) address the importance of understanding the integration of recovery, relationships, and resiliency, 2) describe the methods, measures, and analysis of the data, 3) provide an overview of the emerging trends found during data analysis, 4) conclude with recommendations for further research and applications.

**What is Music? An Educational Examination of Contemporary Composers:  
Teacher Work Sample**

Andrea Koester\*, (*Name of Mentor*)  
Viterbo University

As the Education Program at Viterbo University is accredited through the National Council for the Accreditation of Teacher Education (NCATE), students within the program adhere to strict standards such as developing highly researched and organized instruction in order to better serve our pupils. As part of our curriculum within the Education Program, we are required to develop several Teacher Work Samples (TWS), or unit plans. Each TWS includes contextual factors, gained by research into the unique demographics of each school and classroom; unit goals and objectives, based on the Wisconsin Model Academic Standards; detailed lesson plans, including assessment prior to, during, and after instruction; and thorough reflections on the effectiveness of the instruction. During my observation prior to development of my teacher work sample at Longfellow Middle School in 2008 I gathered qualitative data on the students. I then developed a TWS designed to challenge Middle School students to examine and redefine their definition of music by exploring the composition styles of the contemporary composers John Cage and Arnold Schoenberg. The unit also included an interactive composition project as the final assessment. Due to time constraints, I was only able to teach a portion of my unit plan within my educational observation experience. However, within the portion I was able to teach, I was fortunate to be able to practice assessing students in a variety of ways forming a solid basis for reflection and a strong sense of achievement. This prepared me for developing my TWS and gathering pre- and post-data for the full TWS I am completing this semester during student teaching.

**Attenuation of oxidative damage in an Alzheimer-like strain of *Drosophila melanogaster* using  
670 nm photobiomodulation: A pilot study**

Aleksey Sakharuk\*, James Peterson, David Bauer  
Viterbo University

Alzheimer's disease is the most common form of dementia in the United States. At any given time, over five million people are living with the negative consequences of the disorder, impacting individuals' physical, emotional and psychological well-being and placing an enormous strain on society through medical costs and loss of productivity. Although research indicates that dysfunction of mitochondria and increases in oxidative stress are the first signs of the developing Alzheimer's disease, currently no cure exists. However, photoirradiation with specific wavelengths of light appears to augment mitochondrial function and may decrease oxidative stress. This influence of light on biological systems is known as photobiomodulation and may represent a novel therapeutic approach to disorders such as Alzheimer's expressing mitochondrial dysfunction and oxidative stress. This study sought to examine the effects of photobiomodulation on wild-type and mutant neurodegenerative Alzheimer-like *Drosophila*. *Drosophila* were exposed to an array of 670 nm light-emitting diodes (LEDs) with a power intensity of 50 milliwatts/cm<sup>2</sup> for 10 min each day for ten days. Oxidative stress was then measured by assaying 8-isoprostane, a molecular marker of lipid peroxidation. Results demonstrated that mutant flies receiving the light treatment expressed a substantially reduced level of oxidative stress. These results suggest that 670 nm photobiomodulation may serve as a therapeutic agent in disorders such as Alzheimer's and as such warrants additional exploration.

## **Music and Mood: Does Popular Music Affect Aggression?**

Sarah Winecke\*, Jamie Peterson, Gil Clary  
St. Catherine University

The purpose of this study was to examine affects of aggressive popular music on aggressive behavior. All participants were female college students; most participants reported ages between 18 and 25, and two participants reported ages over 25. Participants were told the study was being conducted on internet aggression; participants were not told that the experiment involved music of any kind. After students consented to participate in the study they were given a packet that included a packet of comments with varying levels of aggression directed from one girl to another. Once they viewed an exchange participants completed a survey rating the aggression of the comments. During the time participants reviewed the packets and answered questions either classical music (the control condition) or music with aggressive lyrics (the experimental condition) played in the background. After an inconclusive ANOVA test, three t-tests revealed no significant results. Slightly more participants in the experimental condition replied that they would delete aggressive comments compared to participants in the control condition, but there was not a significant difference. Limitations of the study include many of the participants possibly realizing that the music was part of the study. Future studies should focus on creating a methodology where background music will not be questioned, but will not be thought of as part of the study.

## **Soil Analysis of Varied Farming Practices at the FSPA Villa**

Kathryn Korthauer\*, Katie Corcoran, Christopher Iremonger, Sister Lucy Slinger  
Viterbo University

As the organic food movement becomes more popular, more people are looking for different answers to how farming practices affect land quality. The Franciscan Sisters of Perpetual Adoration (FSPA) are among those who are looking to transition to local, organic, and small farm food sources. The Sisters, over the last few years, have begun to expand their garden. They are also requiring a transition of farming practices on a portion of the land they rent out. This land is referred to as "transitioning" and is being farmed conventionally without the addition of commercial fertilizers or pesticides. They decided it would be important to have baseline data on soil quality of their land so that the most ecologically conscientious decisions can be made. Therefore, throughout the summer, a variety of soil tests were performed in the organic, conventional, and transitioning cropland. The soil tests included: electroconductivity, pH, nitrate, respiration, infiltration, bulk density, and earthworm activity. There were some significant differences found for soil infiltration, nitrates, bulk density, and pH. Greatest differences across sampling sites were found for infiltration and nitrate. Where significant differences were not found, further study is needed to account for possible variations caused by sampling during differing weather conditions.