The Inauguration of the
12th President of Mount St. Mary's College
Ann McElaney-Johnson

Academic Symposium

March 15, 2012
1:00pm PLATFORM PRESENTATIONS

402A Humanities  Understanding the Meaning of Social Responsibility and Cultural Competence to Physical Therapists Volunteering in International Settings: A Mixed Methods Design  
Presenter: Alan Chong W. Lee  
Department of Physical Therapy

403 Humanities  Leadership and Mission-Based Decision-Making: The U.S. Roman Catholic Bishops' Response to the Priest Shortage  
Presenter: Katie Hoegeman  
Department of Sociology

404 Humanities  Synthesis of Functionalized Nanoparticles that Aid in Coagulation  
Presenter: Lauren Que  
Department of Physical Sciences and Mathematics and MARC program

405A Humanities  Aiming toward College in China and the United States: A Comparison  
Presenter: Nancy Pine  
Department of Education

405B Humanities  So You Want to Write a Novel?  
Presenter: Marcos McPeek Villatoro  
Department of English
1:30pm PLATFORM PRESENTATIONS

402A Humanities  The role of Polycomb proteins in the progression of prostate cancer.

  Presenter: Luiza Nogaj
  Department of Biological Sciences

403 Humanities  Evolution of a Service Learning Program: Engaging nursing students in social justice.

  Presenters: Terri Eichman, Mary Molle, Elizabeth Wechsler
  Department of Nursing

404 Humanities  Dimensions of Gender Stereotypes

  Presenter: Magdalena Lopez
  Department of Psychology and MARC program
  MARC program

405A Humanities  Barbara Jordan, the Bible and Performed Power

  Presenter: Robin Owens
  Department of Religious Studies

405B Humanities  Treatment of Concussion

  Presenter: Scott Edwards
  Department of Nursing
2:00pm PLATFORM PRESENTATIONS

402A Humanities  Medieval Menopause as Apocalypse

Presenter: Matthew Brosamer
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403 Humanities  Charge Transfer through DNA: is DNA a Wire?

Presenter: Eric Stemp
Department of Physical Sciences and Mathematics

404 Humanities  Mental Health Status of Women in California

Presenters: Darla Dunlop and Gregory Travis
Department of Psychology

405A Humanities  The Perceived Impact of Holding a College Leadership Position on First-Generation Latina Alumnae

Presenter: Rosalyn Kempf
Women’s Leadership

405B Humanities  Does it sound native?: Assessing ...

Presenter: Nancy Ballesteros
Department of Language and Culture
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402A Humanities  Dependence of DNA Protein Cross-Linking via Guanine Oxidation upon Local DNA Sequence As Studied by Restriction Endonuclease Inhibition

Presenter: Zitadel Anne Perez
Department of Physical Sciences and Mathematics

403 Humanities  Distaff Distortion: the Confines of Convention in Film Portrayals of Ophelia

Presenter: Lauren Buisson
Humanities Graduate Program

404 Humanities  The Nazi Use and Abuse of Intellectuals and German Cultural Capital

Presenter: Daniel Sprankle
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405A Humanities  Re-integration of Student Veterans in higher education through the lens of Appreciative Advisement

Presenter: Madeleine D. Bruning and Rebecca Otten
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405B Humanities  Integrating Practical Geometry and Statistics into Service Learning Activities: Remediating Stormwater Runoff with Community Rain Gardens

Presenter: Eugene Allevato
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Understanding the mechanism of DNA modification
Presenter: Stacey Peterson
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403 Humanities
Student Approaches to the NCLEX-RN: A Critical Incident Technique
Presenter: Anne Tumbarello
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Management of Second-Generation Antipsychotic Medication Associated Obesity
Presenter: Patrick August Sonza
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A Path to Bootstrap from a Small Enantiomeric Excess to Enantiomeric Purity: A study of Adsorption of D, L, and DL N-acetyl Leucine in Zeolite NaY
Presenter: Hyeran Choi
Department of Physical Sciences and Mathematics

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Reginald Pecock's Catechesis: Catholic Pedagogy During the Lollard Heresies
Presenter: Jennifer Tran Smith
Humanities Graduate Program
3:30pm PLATFORM PRESENTATIONS

402A Humanities

**Diastasis Recti Abdominis: Physical therapy evaluation and treatment techniques used in clinical practice for postpartum women**

Jessica Keeler, Melissa Albrecht, Lauren Eberhardt
Physical Therapy

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**Selective oxidation of 8-oxo-guanine by Os(phen)2dppzCl2 as visualized by DNA-protein crosslinking**

Kelsey Miller
Department of Physical Sciences and Mathematics

404 Humanities

**Seeing the Light: Exploring Ethics Through Movies**

Presenter: Wanda Teays
Department of Philosophy
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<td>Investigation of protein-protein interactions in the first steps of the tetrapyrrole pathway</td>
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Patient Assessment: A Comparison Of Roy Adaptation Model and Abdellah: 21 Nursing Problems
Quality Care: A Concept Analysis
The Role of Ring1A and Rnf2 in the Progression of Prostate Cancer Cells
Tough as Lace: A pictorial journey of the Sisters of St. Joseph and the empowerment of women
Utilizing public health nurses to reduce postpartum depression: An international comparison of nursing practice with implications for health care reform.
Volunteer and Collaboration with Prader Willi California Foundation
West Side Thanksgiving Community Event: A day of volunteering and giving to our community
Will Good Friends or More Friends Protect Me from Bullying?
Integrating Practical Geometry and Statistics into Service Learning Activities: Remediating Stormwater Runoff with Community Rain Gardens-(Poster)
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Thursday, March 15, 2012

Moderators: Jeanette Stone, Michelle Samuel, Luiza Nogaj

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Department of Physical Sciences and Mathematics
### Academic Platform Schedule Room 404

**Thursday, March 15, 2012**

**Moderators:** Anne Tumbarello, Laurie Garry, Nathan Chu

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Academic Platform Schedule Room 405A

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Presenter: Jennifer Tran Smith
Humanities Graduate Program
RESEARCH ABSTRACTS

PLATFORM

(Alphabetical order of Presenting Authors)
With the increasing urgency to restore and manage coastal seas, the more you communicate with and educate today’s younger generation on environmental issues the better solutions will arise. In this respect, it is crucial to identify appropriate teaching strategies and other means to sensitize future teachers to practical aspects of math and science in order to motivate, develop awareness, and instill engagement and social responsibility skills in our youngsters. This paper will present an instructional model that was utilized to instruct statistics and geometry to future elementary school teachers from a transdisciplinary perspective.

The model involved practical aspects of geometry and statistics in the context of current environmental issues. This project took place primarily in a charter school where pre-service teachers introduced basic skills in geometry and implement environmental solutions to runoff pollution by engaging charter school students in building rain gardens at a community center. The design of the rain garden involved statistical analysis of precipitation data from the last 10 years with volumetric calculations and feasibility cost evaluation. The concept that teachers can connect course content to real world problems and concurrently contribute to the development of students’ critical thinking skills has been discussed previously elsewhere but little has been done to implement this concept on the professional development curriculum of future elementary school teachers.

Assessment of learning outcomes was based on a questionnaire implemented before and after instruction at the Charter school. Analysis of the effectiveness in active learning linking lecture with a practical activity was evaluated based on the level of environmental consciousness and the understanding of mathematical processes to solve real world problems. This instructional model emphasized the importance of pre service teachers to implement systemic thinking to integrate subject content and real world problems in order to develop creative and critical thinking skills in our children to live each day of their lives with an environmental consciousness and to become better decision-makers.
This paper explores the acquisitional processes in learning the Spanish phonological system as a Second Language (L2) learner, within traditional and online environments. Particular interest will be placed on the role the main conduit of the incoming speech signal (the ear) and memory have in the proper attainment of the L2 phonological inventory.

The current pilot study includes: A) 40 students from traditional and online environments, and B) 20 monolingual speakers of Spanish that have been trained to evaluate the nativeness of each production. Nativeness is determined by the subjects’ perception and production of Spanish voiced and voiceless stops /b, d, g, p, t, k/, respectively and the rhotics /ɾ/ and /r/. Imitation, repetition, and shadowing tasks serve as the training tools for the subjects. This paper explores the acquisitional processes in learning the Spanish phonological system as a Second Language (L2) learner, within traditional and online environments. Particular interest will be placed on the role the main conduit of the incoming speech signal (the ear) and memory have in the proper attainment of the L2 phonological inventory.
Ideas derived from the apocalyptic tradition found their way into some unexpected places in the Middle Ages; one is the body of attitudes about menopause. Apocalyptic theology tended to stress the relevance of its ideas in the realm of the personal. At the end of time there will be a general apocalypse, but for each individual there are a series of personal apocalypses, related to the "Ages of Man" topos - each stage of a person's life ends in an apocalyptic manner, giving way to the new and different. Death is the ultimate personal apocalypse, but the death of one's fecundity also signaled a fundamental transition from one state of being to another. Focusing on 14th and early 15th centuries, I will look at a number of texts (apocalyptic, literary, medical/biological) to see how they help us understand this dimension of what it then meant to be an "old" woman.
Since October 2001, approximately 2 million U.S. troops have been deployed for Operations Enduring Freedom (OEF) and Iraqi Freedom (OIF) in Afghanistan and Iraq (Tran, 2009, RAND, 2011). The Post 9/11 GI Bill, which was enacted in July 2008 and took effect in August, 2009, provides funding to veterans affording them the opportunity to pursue higher education. In anticipation of this influx, university advisors, faculty and staff must recognize that returning veterans bring a wealth of life experience to the campus, enriching the diverse and complex tapestry of the college community.

Approximately 450,000 veterans using their GI Bill benefits for education with 40% attending community colleges (Alvarez, 2008). However, the dropout rates are at a staggering 70% nationwide, compared to approximately 45% for non-Student Veterans enrolled in two-year colleges, and approximately 25% of non-Student Veterans in four-year colleges or universities (Kognito, 2011). For many veterans, entering college is the first step towards reintegration into society. Retention and completion is not only important to the success of the veteran, but to the nation’s recovery.

The purpose of this case study is to explore the process of assessment, remediation, re-entry and successful degree completion of one Student Veteran’s experience during re-enrollment in higher education, specifically, an undergraduate nursing program. The findings from this study will provide a deeper context for understanding the social transition and academic challenges associated with Student Veterans deployment and re-entry into college. Since many veterans served as medics or corpsman, there is an attraction to professions in the health sciences such as nursing, physical therapy and occupational therapy. Special attention will be given to the roles of the faculty advisor and the Student Veteran by identifying the student’s distinctive strengths and developing a strategic plan for remediation and re-enrollment based upon the student’s positive attributes and goals through the lens of the Appreciative Advisement Model.
Within the genre of Shakespearean film Hamlet is the most frequently adapted work of the Bard’s oeuvre. Never remade but rather revisited, each individual film reflects the era in which it is made and the characterization of Hamlet shifts with the times. The same cannot be said of Ophelia. There has been no commensurate evolution in her depiction; renditions of Ophelia are stubbornly resistant to innovation and reinterpretation.

This paper will examine the origins for this curiously reductive tradition. Beginning with Laurence Olivier’s seminal 1948 interpretation I will explore the cinematic techniques that contribute to our facile understanding of a pivotal female character. I will probe the historical progression of our conflicted, confused and constrained portrayal of Ophelia the roots of which can be traced to Shakespeare. Moreover, I will investigate the psychological phenomena that contribute to this powerfully enduring and ultimately stifling representation of young womanhood which remains an inviolable element of the Shakespearean film genre.
Biochemistry crucially depends on asymmetric (chiral) molecules that can exist as two versions that are mirror images of each other (enantiomers). The answer to the important question of how enantiomeric purity was achieved in a prebiotic world is still unknown. Enantiomeric purity is also very important in the pharmaceutical industry, since the wrong enantiomer is often useless or harmful. Achiral zeolites do not adsorb preferentially one enantiomer over the other. However, adsorbing enantiomers at a 1:1 ratio will increase the enantiomeric excess of a solution that already had an enantiomeric imbalance. This is only achieved when the D- and L-enantiomers are adsorbed as a heterodimer. The adsorption behavior of D, L, and DL N-acetyl Leucine into Zeolite NaY was investigated using solid state NMR, thermogravimetric analysis (TGA), Differential Scanning Calorimetry (DSC) and X-ray diffraction. The solid state NMR spectra of pure D-, L-, as well as the racemic mixture N-acetyl-DL-Leucine generated identical NMR spectra in the absence of Zeolite NaY. This indicates that N-acetyl-DL-Leucine crystallizes as a racemic conglomerate where the powder consists of microcrystals of pure D or L enantiomers, rather than a racemic compound where the unit cell of the crystals contain a 1:1 ratio of D- and L-enantiomers. According to our latest results the racemic mixture displays the same spectrum when adsorbed in Zeolite NaY indicating that they are adsorbed as homodimers. Preliminary Thermogravimetric Analysis (TGA) data indicated that approximately 8 percent of the enantiomers are adsorbed. DSC shows exothermic decomposition of the sample at 290°C. X-Ray diffraction techniques will be analyzed to further elucidate the microenvironments of free and adsorbed amino acids.
There are many personal and societal costs for California women associated with psychological disorders and substance abuse. This is especially true when such impairments result in disruption to self, family and children, as well as in increased financial costs due to treatment and lost productivity. Although we have advanced our understanding and treatment of psychological disorders, seeking and acquiring care remains a source of shame and disgrace for many of our citizens.

This report will examine gender differences in psychological disorders and substance abuse of women and girls in California, as well as issues related to access to mental health care. Although California women are twice as likely to experience depression, anxiety and PTSD as their male counterparts, and approximately 1.5 times more likely to identify a need for psychological services, they continue to receive the same amount of treatment as men. Part of the explanation may lie in current data which suggests that women experience more barriers to mental health care, have fewer means of paying for treatment with lower rates of insurance coverage and less ability to pay out of pocket, and continue to feel the stigma of centuries of prejudice against mental illness and mental health treatment.
Concussions affect nearly one million Americans each year and often result in lost work time, decreased ability to partake in enjoyable activities, and hindered intellectual and academic pursuits. A literature review suggests that concussion sufferers have an increased risk for subsequent concussions and those suffering from these successive concussions are more likely to experience complications found in more severe head trauma. This greatly increases risk of permanent disability or death. Of clinical interest is the quick and full recovery from a concussion. Based on a literature review, the incidence and pathophysiology of concussion, pharmacotherapeutics and possible future pharmacotherapeutics are explored. In addition, potential research samples are discussed.
Leadership and Mission-Based Decision-Making: The U.S. Roman Catholic Bishops' Response to the Priest Shortage

One of the options for dealing with the growing priest shortage in the Roman Catholic Church is for bishops to appoint non-priests to lead some parishes (priests still provide sacramental ministry). The U.S. Catholic Church is divided into 177 geographic dioceses. Prior research found that diocesan structural characteristics (scope of the priest shortage, parish size, and distance between parishes) were significantly related to whether or not dioceses had some non-priest leaders. However, this research also suggested that the bishop of the diocese (as the primary decision-maker) might be a more influential factor than the structural characteristics in predicting use of non-priest parish leaders. My research in this paper adds bishop characteristics to the previous model, specifically, whether the bishop has a liberal or conservative ideological perspective. I hypothesized that liberal bishops would be more likely than conservative bishops to use non-priests as parish leaders. I have data from all 177 dioceses (and bishops), from 1986 through 2009, so I identify trends over time. My theoretical framing is from the strategic management perspective and my findings are consistent with this literature. Multiple factors were significant in predicting bishops' decisions regarding the use of non-priest leaders: organizational characteristics, the local environment (diocesan structure), leader characteristics, and the broader institutional environment (The Catholic Church). Bishops ideology had some effect, and in some time periods, but not others. The objective situation, specifically, the scope of the priest shortage, had more consistent effects. While bishops might have been expected to make decisions based on a value-rationality perspective, their decision-making appears to be more pragmatic, or instrumentally rational.
The Latino population in the United States is rapidly growing and with that has come increasing numbers of Latino students in the educational pipeline. Females make up the majority of college going Latinos accounting for almost 60% in 2004. Despite the fact that the number of Latina students is continuing to grow within higher education at greater rates than any other racial/ethnic group, they are still underrepresented in student leadership positions. This proposed presentation is based on a dissertation study that investigated the leadership experiences of first-generation Latina college alumnae in order to explore this issue and gain insight into the intersection of leadership, gender, and social capital. The study was conducted at Mount St. Mary's College and included a purposive sample of 12 first-generation Latina alumnae who held college leadership positions while at the Mount. Of the sample, seven began college at the Chalon campus and five at the Doheny campus. Participants graduated between 1993 and 2003. Using a qualitative approach, the study examined the ways in which leadership positions impacted the collegiate experience and later lives of Latina alumnae. The following research questions were investigated:

1) What do Latina first-generation alumnae say influenced their decision to get involved in leadership activities in college?

2) According to these students, how did being in a leadership position influence their college experience in terms of academics, social activities, and family life?

3) What networks and/or relationships do Latina alumnae say they have gained from being in a leadership position?

4) In what ways if any, do they believe that their college leadership experiences affected them after college?

5) What skills and experiences from these leadership experiences, if any, do they say influenced their professional and personal choices after college?

By examining the impact of leadership positions on the college and post-college experiences of first-generation Latina alumnae, this study was able to identify elements that are important in the development of these leadership experiences and provide further insight into how such students understand and experience leadership and involvement in college.
Understanding the Meaning of Social Responsibility and Cultural Competence to Physical Therapists Volunteering in International Settings: A Mixed Methods Design

Author(s): Alan Chong W. Lee
Department/Program Chair: Deborah Lowe
Department/Program: Physical Therapy
Presentation: Platform

Purpose: Purtilo, in her thirty-first Mary McMillan Lecture in 2000, noted that the task for future physical therapists will be to establish a "period of societal identity" as the moral foundation for a true professional partnering with the larger community of citizens and institutions. Hence, one might wonder how the physical therapy profession is achieving the goals of Vision 2020 and in particular, Purtilo's challenge to achieve cultural competence and social responsibility as a core component of the profession. The purpose of this study was to examine the experiences of physical therapists volunteering in international settings in order to understand the essential meaning of social responsibility and cultural competence from the participants' perspectives, and to investigate whether existing measures of social responsibility and cultural competence capture such experiences effectively.

Subjects: Purposive sampling from 2 clinician pairs (n=136), consisting of novice (0-2 international service activities, n=32) and experienced (3+ international service activities, n=23) physical therapy volunteers located from the American Physical Therapy Association's membership directory participated in this study.

Method: The APTA Professionalism Self-Assessment and the Campinha-Bocate Cultural Competence Instrument (IAPCC-R) online survey were utilized to gather quantitative data. A formal qualitative methodology (two in-depth interviews) of seven experienced physical therapists followed.

Results: Study outcomes resulted in 55 usable surveys demonstrating a statistically significant difference between novice and experienced groups on the IAPCC-R total scores. Social responsibility was moderately and positively correlated with cultural competence in the experienced group. Three common themes relating to the nature of social responsibility and cultural competence emerged: attaining a right fit (with the following subthemes: personal and professional drive aligned with sense of self/values, community and professional social networks), sharing gift of knowledge and recognizing boundaries, and a wider lens continuum.

Conclusion: The findings suggest that social responsibility and cultural competence may not be mutually exclusive. In addition, experienced clinicians may have identified a right fit for their personal and professional drive through their sense of self/values and social networks. Since experienced clinicians may possess a wider view of core values, they can help model social responsibility and cultural competence to novice physical therapists.
Although two individuals may have similar stereotypes, they may have different stereotype distributions (beliefs about how many people fit the stereotype). For example, two individuals may have the same stereotype of women, but one believes that 90% of women fit the stereotype, while the other believes 55% of women are stereotypical, and the remaining 45% can be classified as subtypes (exceptions to the stereotype). This study investigated how we perceive stereotypes and stereotype distribution in relation to self-categorization and prejudicial attitudes. It was expected that greater distributions would be associated with 1) a greater likelihood of self-categorizing as stereotypical, rather than atypical, 2) differences in stereotype structure, such as fewer subtypes, and more stereotyped traits, and 3) increased prejudicial attitudes, such as sexist beliefs and stereotypical ratings. Participants were 119 male and 137 female, predominantly White, college students. Stereotype structure was determined by giving participants 100 cards, each containing a trait, and asking them to make piles of typical and atypical (subtyped) men and women. Self-categorization was determined by asking participants to identify the pile in which they belonged. Stereotype distributions were captured by giving participants poker chips, representing real people, and asking them to distribute the chips among the created piles. Participants also rated each gender on 100 traits and completed sexism measures. Analyses partially supported the first two hypotheses. ANOVA revealed that participants self-categorized as stereotypical held higher distributions (percentage of their own gender expected to be stereotypical) than did atypicals. Correlations showed a negative relationship between distributions and subtypes (atypical piles). These results suggest that stereotype distribution is an aspect of stereotypes worth exploring.
Objective: The purpose of this study was to determine and describe intervention techniques utilized by physical therapists to address diastasis rectus abdominis (DRA) in postpartum women.

Study Design: Descriptive Survey

Background: DRA is defined as a separation of the rectus abdominis muscle as a result of partitioning at the linea alba. DRA occurs in 60% of postpartum women. Despite this high prevalence, information regarding therapeutic approaches for DRA is scarce.

Methods and Measures: The survey was distributed to members of the Women's Health Section of the American Physical Therapy Association; 296 responses were included. The survey contained questions on clinician experience, patient presentation, evaluation, interventions, and estimated success. The questionnaire included 18 multiple-choice questions and was distributed via Survey Monkey. Descriptive statistics were collected.

Results: One-hundred percent of the 296 respondents incorporated therapeutic exercise into their plan of care, such as general transverse abdominis (TA) training (89.2%), TA training with functional activities (82.8%), and the Noble technique (62.5%). Fifty-nine percent of the physical therapists utilize manual therapy techniques, and 81.2% use therapeutic modalities. All therapists saw patients for a mean of 1.56 visits per week. The most common length of treatment was 4-6 weeks (38%). Sixty-nine percent of the respondents reported a success rate of 41-100%.
Selective oxidation of 8-oxo-guanine by Os(phen)2dppzCl2 as visualized by DNA-protein crosslinking

Author(s): Kelsey Miller, Zitadel Anne Perez, Amanda Madison, Eric Stemp
Department/Program Chair: Eric Stemp
Department/Program: Physical Sciences and Mathematics
Presentation: Platform

8-oxoguanine is a common oxidation product in DNA that can lead to mutation. The metallointercalator Ru(phen)2dppz2+ is a guanine-selective oxidizing agent via the flash-quench technique and here we introduce its osmium analogue as a way to selectively oxidize 8-oxoguanine, as visualized by oxidative DNA-protein crosslinking. With the 3+/2+ couple at 1.15 V for Os(phen)2dppz2+, this metallointercalator should be able to oxidize 8-oxo-G (~0.7 V) without oxidizing guanine (~1.3 V). In DNA containing 8-oxo-G, flash-quench treatment with Os (phen)2dppz2+ and Co(NH3)5Cl2+ leads to crosslinking with histone, as seen by the chloroform extraction and gel shift assays. Furthermore, in gel shift experiments of the oligonucleotide 5’ATATGATAT8GATATGATAT-3’ (8 = 8-oxo-G), flash-quench treatment with Ru(phen)2dppz2+ in the presence of histone leads to a band of intermediate mobility (presumably 1:1 crosslink) and to well-shifted material. In contrast, analogous treatment with Os(phen)2dppz2+ produces only the band of intermediate mobility, consistent with the presence of only one site that is oxidizable by the osmium complex.
Evolution of a Service Learning Program: Engaging nursing students in social justice.

Author(s): Mary Molle, Scott Edwards, Terri Eichman, Charlene Gagliardi, Eileen McArow, Patricia Melnick, Sharon Moore, Elizabeth Wechsler

Department/Program Chair: Anne Tumbarello

Department/Program: Nursing

Presentation: Platform

Aim: This presentation describes how Mount St. Mary's College evolved their plan for nursing students from extra-curricular service learning projects to encompass their goal of educating students with a passion for social justice and holistic health and healing.

Background: Community Campus partnerships continue to encourage service learning by students across disciplines. Nursing students, especially in public health, are capable of providing invaluable service with the potential to improve the health of local communities. However, challenges exist, such as, incorporating service learning into the intensive nursing curriculum, and managing labor intensive service learning programs.

Conclusion and Approach: This presentation describes the history of service learning at Mount St. Mary's College with traditional bachelor’s degree nursing students, subsequent evolution, challenges faced, and lessons learned. Models and definitions of service learning are discussed. Armed with a campus mission and mandate to teach socially responsible leadership, provide remarkable service, and engage with the local community; and given new support for developing strategic partnerships, faculty reflect on their developing perspectives on service learning.

Audience: Programs considering implementing service learning across undergraduate and graduate programs as well as those interested in sharing experiences related to service learning are invited to participate in this presentation.

Educational objectives:

Participants will:
1. Describe one model of service learning.
2. Engage in an interactive discussion regarding implementation of service learning.
The role of Polycomb proteins in the progression of prostate cancer.

Author(s): Luiza Nogaj
Department/Program Chair: Jennifer Chotiner
Department/ Program: Biological Sciences
Presentation: Platform

Prostate cancer remains one of the leading causes of death in men. Due to its heterogeneous nature and lack of reliable molecular markers for early detection, it is difficult to predict the progression and aggressiveness of the tumor. Because of these obstacles, it is estimated that over 240,000 men will be diagnosed with this disease in 2012 (Siegel R. et al, 2012). My laboratory focuses its efforts on understanding the molecular and biochemical mechanisms that lead to the progression of prostate cancer. Members of my group examine prostate biopsy samples and check for differences between normal, benign, and malignant biopsy tissues. Our efforts identified several proteins collectively called Polycomb that change their levels as the cancer progresses. These Polycomb proteins turn off tumor suppressor genes and might be the cause of cancer progression. Our initial results led us to do more rigorous biochemical studies on the role of Polycomb in turning off genes. We are currently purifying and investigating the roles of these Polycomb proteins in prostate cancer progression.
As a direct result of her early life experiences with the Bible, U.S. Congresswoman Barbara Jordan (1936-1996) engages in a practice of “signifying on scriptures” in her political speeches. While she does not explicitly cite the Bible in her speeches, I argue that its implicit influence is embedded in the manner in which she utilizes American scriptures (namely, the U.S. Constitution and the Declaration of Independence) as a performed language in her speeches as she negotiates political power. This act of performed power, and the Bible's influence upon it, is demonstrated in this paper.

Through a case study approach based on historical, biographical, rhetorical and literary analysis, this paper answers the clarion call of historians of religion, namely Wilfred C. Smith, Miriam Levering, William A. Graham and Vincent Wimbush to give serious scholarly attention to individual and community engagements with scriptures and their scripturalizing practices. Barbara Jordan's political speeches alongside her early life experiences provide a model and point of departure from which to examine other women public speakers in relation to the Bible and power negotiation.
Dependence of DNA-Protein Cross-Linking via Guanine Oxidation upon Local DNA Sequence As Studied by Restriction Endonuclease Inhibition

Author(s): Amanda Madison, Zitadel Anne Perez, Phuong To, Tiffany Maisonet, Eunice V. Rios, Yuri Trejo, Carmen Ochoa-Paniagua, Eric Stemp
Department/Program Chair: Eric Stemp
Department/Program: Physical Sciences and Mathematics
Presentation: Platform

Oxidative damage plays a causative role in many diseases, and DNA protein cross-linking is one important consequence of such damage. It is known that GG and GGG sites are particularly prone to one-electron oxidation, and here we examined how the local DNA sequence influences the formation of DNA protein cross-links induced by guanine oxidation. Oxidative DNA protein cross-linking was induced between DNA and histone protein via the flash quench technique, a photochemical method that selectively oxidizes the guanine base in double-stranded DNA. An assay based on restriction enzyme cleavage was developed to detect the cross-linking in plasmid DNA. Following oxidation of pBR322 DNA by flash quench, several restriction enzymes (PpuMI, BamHI, EcoRI) were then used to probe the plasmid surface for the expected damage at guanine sites. These three endonucleases were strongly inhibited by DNA protein cross-linking, whereas the AT-recognizing enzyme AseI was unaffected in its cleavage. These experiments also reveal the susceptibility of different guanine sites toward oxidative cross-linking. The percent inhibition observed for the endonucleases, and their pBR322 cleavage sites, decreased in the order: PpuMI (5’-GGGTCCT-3’ and 5’-AGGACCC-3’) > BamHI (5’-GGATCC-3’) > EcoRI (5’-GAATTC-3’), a trend consistent with the observed and predicted tendencies for guanine to undergo one-electron oxidation: 5’-GGG-3’ > 5’-GG-3’ > 5’-GA-3’. Thus, it appears that in mixed DNA sequences the guanine sites most vulnerable to oxidative cross-linking are those that are easiest to oxidize. These results further indicate that equilibration of the electron hole in the plasmid DNA occurs on a time scale faster than that of cross-linking.
Organisms are composed of units called cells in which reside molecules of DNA. DNA contains all the information required for an organism to survive and carry out its functions such as growth and reproduction. Proteins in the cell called enzymes modify DNA by changing its structure. DNA modification affects many cellular functions and when not properly regulated can lead to cancer and other medical conditions like arthritis and obesity. DNA-modifying enzymes are present in human cells and in simpler organisms like bacteria. DNA modification in certain bacteria contributes to their ability to cause disease in humans. The research conducted in my lab focuses on understanding the activity of a bacterial DNA-modifying enzyme. We specifically study how the enzyme’s structure and interactions with other proteins in the cell affect its ability to modify bacterial DNA. A better understanding of bacterial DNA modification will help us better control pathogens and fight infections. Furthermore, insights into these mechanisms in bacteria may be applied to similar systems in humans.
Based on interviews of high school students and college undergraduates plus observations in more than 100 schools in China and the United States, this presentation outlines the fundamental differences and stresses students experience in the two countries while trying to be accepted to college. Chinese students prepare for a college entrance exam beginning in first grade. U.S. students participate in a many-layered college entrance system that, though stressful, provides a variety of ways to show their talents. In the process of preparing for college entrance, Chinese students develop notable abilities to focus on study, but are limited in self-expression, while American high school students develop multiple areas of interest but are at risk of spreading themselves too thin. Each system, meanwhile, eyes the other for ideas of how to improve current policies. This investigation is part of a cluster of studies on student literacy and achievement in both countries that span 20 years.
Currently there is no set universal treatment for internal bleeding yet it accounts for a high mortality rate in hospital admission. In previous research, nanoparticles have been functionalized with material to enhance coagulation in internal wounds. The goal of this research was to synthesize nanoparticles, silica and titania, that could be functionalized with a procoagulant material such as polyphosphate or thrombin. Direct administration of these loaded particles could increase the concentration of the overall threshold for clotting activity in an internal wound and thus reduce healing time. The final product of this research was composed of three components 1) a nanoparticle which acted as a transport 2) an intermediate which was a coupling agent and 3) a procoagulant material which increased clotting activity. Two silica nanoparticles were synthesized, MCF and ZJU1, which were later tested with either polyphosphate or thrombin. The intermediate for polyphosphate was 3-aminopropyltrimethoxysilane (APTES) and for thrombin, a HEPES buffer. 1-ethyl-3-[3-dimethylaminopropyl]carbodiimide (EDC) was used to activate APTES and thus increased its ability to functionalize with the surface of the nanoparticles. BET and X-Ray Diffraction were used to characterize the particles while ZetaPotential was used to indicate the presence of the adhered intermediates. After the addition of the procoagulant material, UV spectroscopy was performed to confirm the presence of such molecules onto the silica nanoparticles. Preliminary data has been constructed for the synthesis of the TiO2 nanoparticles.
People with severe mental illness are at more risk in developing chronic medical disorders and metabolic disturbances when treated with second generation antipsychotic (SGA) medications. Obesity and weight gain is one of the most serious metabolic effects of atypical antipsychotics. The purpose of the study was to compare the effectiveness of nutritional diaries via the Lifestyle Balance (LB) Program to manage weight gain and other metabolic effects of patients taking second-generation antipsychotic medications. This was a quantitative and retrospective study focused on a yearlong, psycho-educational intervention on the lifestyle balance program initiated at the research center of a large Veterans Healthcare System in the west coast. A total of sixty participants were enrolled in the program. Forty one out of the sixty participants stayed in the LB program for at least six months. Seventeen out of the forty one or 41.5% complied in using the nutritional diaries consistently for at least six months. Those who adhered to the nutritional diaries reduced calorie and fat consumption. Some metabolic factors improved such as cholesterol level and waist circumference decreased. Those who were compliant with using the diaries lost four times more weight than those who did not comply. A two-tailed t-test analysis showed p = 0.15 which was not significant due to the small sample size. There is an 85% confidence level that compliance to nutritional diaries will result to greater weight loss than those who did not comply. The outcome of the research also indicated that non-pharmacologic measures such as the Lifestyle Balance Program could work for this vulnerable population with substantial rate of compliance. Moreover, nutritional diaries when used consistently, is effective in the management of obesity or weight gain for patients taking second-generation antipsychotic medications.
The Nazi regime used the cultural cachet of the humanities and the reputation of German intellectuals to bolster and augment their ideology and give a veneer of sophistication and erudition to their policies and pronouncements. Humanistic traditions of academic rigor, objectivity, and free inquiry were done away with and everything was subsumed under the needs and greater glory of the state. They shaped and twisted some ideas to conform to Nazi ideology (most famously the ideas of Friedrich Nietzsche). While the intellectuals they found to support the regime already saw an affinity between their ideas and Nazi rhetoric (people like Martin Heidegger and Alfred Baeumler). By manipulating ideas and intellectuals in this fashion the Nazis were able to claim a cultural and historical importance for themselves they felt was important to their legitimacy.
Charge transport is a fundamental process in chemistry and biology, with electron transfer between proteins playing a particularly important role in the production of ATP by mitochondria. The charge transport properties of DNA were until recently understudied, and in 1993 the fluorescence quenching of DNA-bound metal complexes suggested that electrons could move a distance of 30 angstroms in less than one nanosecond, consistent with a weak distance dependence for the charge transfer process in DNA. Given that the distance dependence of electron transfer in proteins was known in numerous studies to be quite strong, this unexpected result with DNA challenged the paradigm and provoked a backlash in the literature, with the validity of these new results being questioned. Further electrochemical and spectroscopic measurements on DNA confirmed a reduction-oxidation (redox) mechanism and showed that disruptions in the base stack of DNA greatly decrease the efficiency of charge transfer, suggesting a through-DNA path for the charge transfer process. This movement of charge through DNA has implications in vivo, as clusters of guanine bases could be used as radical traps and redox-active DNA repair proteins could exploit the DNA's conducting properties to detect damaged sites in the genome.
Bishop Reginald Pecock is probably the most important medieval theologian that you have never heard of. He was the most prolific English religious writer of the fifteenth-century, writing in English (as opposed to Latin) at a time when doing so was fraught with negative political and religious implications. (Writing in English immediately suggested heretical leanings.) He was also the only sitting bishop to be convicted of heresy before the Protestant Reformation began in 1517. Despite Pecock's importance to fifteenth-century history and literature, however, his writings have often been overlooked, maligned, or misunderstood, for his style and language are famously difficult to follow. This paper seeks to bring Pecock's work to a wider audience by explaining how he adapted university-level theology into textbooks intended primarily for laymen. It specifically focuses on Pecock's criticism of the Ten Commandments as an incomplete pedagogical program and his new catechetical schema based on the New Testament Commandments to "Love thy Lord God of al thin herte, and of al thy soule, and of alle thy strengthis, and of al thy minde; and thy neiybore as thyself." Ultimately, this research will challenge listeners to deconstruct terms often cast as binaries in modern classrooms: heretical and orthodox, faith and reason, vernacular and Latinate, literate and illiterate, and medieval and modern. In doing so, it will also challenge the teachers among us to reconsider what it means to teach and how to do so well.
Love movies? Me too!

Movies are a powerful medium. They provide insight into moral reasoning, help us reflect on the human condition, and turn our gaze inward and take stock of our own lives. This book is set out in 3 parts: (1) The Human Condition; (2) Ethical Theory; (3) Ethical Reflection. Around 100 movies are discussed in the book—with the major focus on contemporary film (drama, action film, sci fi, comedies, documentaries, and foreign films!). With the book comes a website so film-lovers (and faculty and students!) can have study questions, powerpoint slides on the different ethical theories, links to interviews with directors and actors, and more!
The National Council Licensure Examination for Registered Nurses (NCLEX-RN) is a culminating experience for graduates of prelicensure nursing programs. The exam connotes mastery of content and the ability to apply clinical judgment in patient care situations while protecting the safety of the public. The licensure exam is also what allows a nursing program graduate to practice as a registered nurse (RN) in the United States (US). The implications of passing this exam have far-reaching consequences for nursing students, educators, nursing programs, regulatory bodies, accrediting agencies, health care institutions, and the public. Despite nursing students being the primary stakeholders, the existing literature has limited studies that discuss student perspectives on the NCLEX-RN. In this qualitative study using a critical incident technique, the researcher interviewed 12 recent nursing program graduates who passed the NCLEX-RN on their first attempt about their preparation and test session experiences. The findings illustrate that students used a wide array of study approaches and they perceived the most effective approach was participation in a review course and in particular, the ability to practice test questions. During the test session, students described the value of reading questions thoroughly and not rushing, applying a decision-making process while answering questions, and taking breaks during the exam. Anxiety was experienced by the majority of students throughout their NCLEX-RN preparation and test session, and it was perceived as ineffective. All students were able to identify strategies they used to manage stress with positive self-talk perceived by all students as an effective approach during test taking. Understanding student perceptions of their preparation and testing experiences offers a significant contribution to stakeholders invested in NCLEX-RN success.
So You Want to Write a Novel?

Author(s): Marcos McPeek Villatoro
Department/Program Chair: Fr. George O’Brien
Department/Program: English
Presentation: Platform

This presentation will be a "show and tell" on novel writing. I will bring a number of tools that I use in the process of writing, as well as a number of re-written manuscripts for one book. This process is the same that I teach in the creative writing classes at the Mount.

I will use computer technology to share more closely the importance not only of telling a story, but also how syntax--the very DNA of writing--makes a novel come alive. The entire 400-plus manuscript rests upon the power, fluidity, suppleness of each sentence.
RESEARCH ABSTRACTS

POSTERS

(alphabetical order of Presenting Authors)
Homeboy Industries: A Partnership for a Safer and Healthier Community

Author(s): Diana Alvares, Janine Torres, Joanne Silvino, Jed Eisma, Michelle Johson, Estella Vinat, Allyson Whitney
Mentor: Ana Marie Cinco and Madeleine Bruning
Department/Program Chair: Gloria Blatti
Department/Program: Nursing
Presentation: Poster

As a Catholic college primarily for women, Mount St. Mary’s College is dedicated to providing a superior education enhanced by an emphasis on building leadership skills and fostering a spirit to serve others. Our measure of success is graduates who are committed to using their knowledge and skills to better themselves, their environments, and the world. In keeping with the college’s mission and as nursing students, we continually collaborate with organizations around our region that share the same vision as us, to better oneself and the community. Through this immersion experience, nursing students become aware and gain insight into the challenges that face incarcerated youth in our community.

Incarcerated youth are often medically marginalized due to limited access to health care, especially care related to mental health. Homeboy Industries is a non-profit organization committed to helping high-risk and formerly gang involved youth to better themselves by giving them a second chance at becoming positive and contributing members of society. Homeboy Industries is the largest gang intervention and re-entry program in the nation, offering free job training, education, and placement along with an array of other services including legal services, mental health services, tattoo removal, substance abuse and life skill courses. This allows each person who comes through their doors to enter the American workforce and in turn, give back to their community. Homeboy Industries was created by Father Gregory Boyle, whose vision is to reduce the rising number of gang involved youth by giving them a positive alternative to life on the streets and offering the motto “Jobs Not Jails”. The organization has continued to grow due to numerous selfless volunteers who dedicate their time and knowledge to serve others and not only better their own lives, but change the lives of every person that they come into contact with.
The Prader-Willi Foundation is dedicated to assisting individuals with Prader-Willi Syndrome (PWS), their families, and the professionals who serve them. At this particular Prader-Willi event held at the Renaissance Hotel in Los Angeles, the people who attended were able to learn about the history, clinical features, characteristics, and different treatment options for Prader-Willi Syndrome. During the PW conference, the clients were given a well-structured day that provided fun interaction with other PW clients like themselves. They had arts and crafts, freeze dance, pass the microphone (hot potato), bingo, a puppet and magic show and of course a controlled snack time and lunch. Our mission at Mount St. Mary’s College; dedicated to providing a superior education enhanced by an emphasis on building leadership skills and fostering a spirit to serve others. Our measure of success is graduates who are committed to using their knowledge and skills to better themselves, their environments, and the world. As students we were provided with a great opportunity for hands-on experience while at the same time fostering relationships with community partners. We were able to apply our classroom studies to community learning and use our skills to better ourselves and the community at large.
Every year for the past 29 years, Vineyard Christian Fellowship has served over 4,000 people on Thanksgiving Day. The event is organized through community partnerships and collaboration with other organizations and individuals. Each year, Vineyard Christian Fellowship serves individuals from various walks of life. They include homeless, disenfranchised individuals and working-poor families to college students unable to get home for the holiday. On November 24, 2011, we joined forces with the Vineyard Christian Fellowship to reach out to those in need. We believe that we as nurses are merely stewards of all the blessings bestowed upon us. We believe in showing our gratitude and sharing our blessings as nursing students with our healthcare knowledge to others. At Mount St. Mary’s college, we are dedicated to providing a superior education enhanced by an emphasis on building leadership skills and fostering a spirit to serve others. As nursing students and in keeping with the college’s mission, we responded to a ‘call to serve’. Most people believe that the biggest blessing of Thanksgiving is sharing a meal with neighbors they have never met before. In addition to serving the traditional Thanksgiving meal, we were able to provide guests with a full array of services such as immunizations, wound care, blood sugar level checks and free hugs for all.
Prostate cancer is one of the leading causes of death in men. Benign types of prostate cancer can be effectively treated while the malignant types are incurable. Therefore, it is important to find molecular markers that will distinguish benign prostate cancers from the malignant ones. The Polycomb proteins (PcG) function as transcriptional repressors and are thought to prevent the transcription of tumor suppressor genes such as p16. The p16 protein is known to prevent the proliferation of cell growth and directs the cell into apoptosis. However, the mechanism of Polycomb-mediated silencing and its connection to prostate cancer progression is still not well understood. We study the role of Bmi1 and Mel-18, members of the Polycomb complexes, on the progression of prostate cancer. Our results on prostate cancer biopsies show an inverse relationship between Bmi-1 and Mel-18 levels. In malignant tumors, there is an over expression of Bmi-1 and an under expression of Mel-18 while the p16 protein cannot be detected. Based on our results from tumor biopsies, we are examining the relationships between Bmi-1, Mel-18 and p16 in vitro using immobilized template assays. These preliminary studies show that Bmi-1 and Mel-18 might be good indicators of prostate cancer progression.
Quality Care

Author(s): Karen Gaille A. Bacosa
Department/Program Chair: Marsha Sato
Department/Program: Nursing
Presentation: Poster

Background
Quality remains on the whole as a nebulous, diverse and lacking in specificity (Murphy, 2007). Quality care has been of central importance to good nursing. The effects of poor quality health care have impacted all our lives indirectly or directly. The need to improve the quality and safety of care is the responsibility of all health care providers, by knowing the different factors that could either facilitate or hinder quality care aids in the improvement of service being rendered to the patients.

Objective
To define quality care and what constitutes high quality care as opposed to low or poor quality care.

Method
The analysis of quality care is performed using the Walker and Avant Analysis Model. This analysis method is utilized because it provides a straightforward process for determining defining characteristics of the concept. It investigates and identifies defining attributes and antecedents as well as consequences to better understand the concept. The process helped elucidate the factors that could either facilitate or hinder to quality care and allowed the identification for possible solutions to the issue.

Results
After literature review, it was established that quality care is affected by factors that could hinder or facilitate the delivery of care. Factors facilitating quality care includes: promotion of patient’s autonomy, adequate time for care giving, and empathy. On the other hand, barriers to quality care were identified as lack of time or time pressure, bounded by routine and resistance to change as perceived by the nurses.

Conclusions
Quality care is attained by giving care that allows recipients to achieve and maintain their highest level of functioning in a dignified and safest way. After the literature review, it was found that quality care is affected by factors that could hinder or facilitate caring and brings about patient’s satisfaction and healing. Further research is needed to identify effective strategies to attain quality care and find measurable ways to assess impact of quality to patients.

Reference
Burnout negatively impacts nursing staff retention and patient outcomes (Bogaert, Meulemans, Clarke, Vermeyen, & Van de Heyning, 2009). Proof of its existence is seen in new nursing graduate retention trends (Cho, Spence Laschinger, & Wong, as cited in Spence Laschinger, Finegan, & Wilk, 2009), which is detrimental given that the future of nursing relies on developing and retaining nurses that provide quality care. The purpose of this analysis was to elucidate and conceptualize burnout in the nursing profession in order to effectively address and resolve the problem. The Walker and Avant Analysis Model was utilized by acquiring its definitions, defining attributes, antecedents, and consequences found in literature, which facilitated the development of a model case. Katharine Kolcaba’s Comfort Theory was applied to analyze and arrive at possible solutions to the problem by emphasizing the four dimensions of comfort---physical, psychospiritual, environmental, and sociocultural---which may be obtained through actions of both the institution and the nurse. Three evidence-based practices were shown to support the presented strategies in resolving burnout: the need for an appropriate nurse practice environment (Bogaert et al., 2009), increased professional involvement and participation in extra-professional activities (Chayu & Kreitler, 2011), and providing bereavement debriefing sessions (Keene, Hutton, Hall, & Rushton, 2010). Conceptualizing burnout elucidates the phenomenons implications to nursing education, nursing practice, nursing research, and healthcare organizations. In order to prevent and better prepare nurses against burnout, education needs to occur as early as the pre-licensure stage. Further research is needed to accumulate more data to identify the most effective strategies in preventing and resolving burnout. Additionally, nurses need to be aware of their own needs and value to their organizations and society, and have the ability to seek and receive support from resources and other support systems. Healthcare organizations also need to encourage a healthy practice environment and nurse self-advocacy to prevent burnout, improve patient outcomes and nurse job satisfaction, and increase retention, which support the institutions viability.
A collaborative approach to promote professionalism in pre-licensure nursing programs through volunteerism and call for service

Author(s): Madeleine D. Bruning, Kathleen Kelly, Sarah Shealy
Department/Program Chair: Gloria Blatti, Sarah Shealy, Anne Tumbarello
Department/Program: Nursing
Presentation: Poster

Working Tenets of Professionalism: MSMC Mission Statement: As a Catholic college primarily for women, we are dedicated to providing a superior education enhanced by an emphasis on building leadership skills and fostering a spirit to serve others. Our measure of success is graduates who are committed to using their knowledge and skills to better themselves, their environments, and the world.

The attitudes, knowledge and behaviors associated with professionalism are well defined in the American Nurses Association (ANA) Code of Ethics. However, there is increasing evidence that the notion of professionalism and altruism has become problematic in all levels of pre-licensure undergraduate nursing programs (Colvin, 2009). Incongruent values among different generations of nurses presents a daunting challenge. Although several instruments have been developed to measure professional and altruistic behavior, findings cannot be generalized due to a broad variance of the types of values that were analyzed (Schank & Weis, 2001). While there is no agreed upon definition of professionalism, nursing administrators, educators and researchers concur that academic and practice settings must provide opportunities for students to engage in valuable activities that incorporate the attributes of professionalism.

Through role modeling and action, students are able to learn and emulate behaviors and incorporate these essential attitudes as they navigate day to day. In addition to addressing professionalism as a core value in nursing curricula, DeLuc and Kotzer (2009) point out that operationalizing professional values through self-assessment, mentoring experiences, skills training, and role modeling by staff has led to an emphasis on how personal and professional values are integrated (LeDuc & Kotzer, 2009). The venue for this experience was the Westside Community Celebration Thanksgiving Dinner where an inter-faith collection of groups and individuals provide health care screening and direct health care services in conjunction with other services and dinner.

Student nurses participate in providing direct health care screening in collaboration with licensed professional providers including physicians, nurses and social workers. Through this experience, students are mentored in the contextual relationship of service as it relates to the mission of their college and the profession they have
As teachers we talk to students and know that many students work one or two jobs, volunteer, care for family and friends, and also carry full college workloads. Hearing these stories inspired us to quantify how much time students engage in each type of activity. To do this we piloted a survey to see how students utilized their time out of class. Two hundred and fifty six students in Psychology courses at Mount St. Mary’s were surveyed. Participants were mainly freshman, Hispanic, and female.
Chemistry of life crucially depends on asymmetric molecules, and favors one enantiomer over the other. How the enantiomeric purity was achieved in a prebiotic world is a profound question still awaiting an answer. Enantiomeric purity is also of great practical importance in the pharmaceutical industry, since the presence of the wrong enantiomer can cause death or irreversible damage to health. As an achiral structure, a zeolite does not favor one enantiomer over the other. However, removing enantiomers at a 1:1 ratio will result in an enantiomeric enrichment of a solution with a preexisting enantiomeric imbalance. This enrichment is achieved when the D- and L-enantiomers are adsorbed as a heterodimer. Whereas pure NaY shows 34% water adsorption, only 4% of the amino acid sample can be adsorbed onto the zeolite as shown by preliminary TGA results. The microenvironment of the adsorbed solutes was studied using solid-state 13C NMR. The spectrum of the racemic mixture is significantly different from that of the D- or L-enantiomer of N-acetyl-Alanine, implying that the two enantiomers form a racemic compound where the two enantiomers crystallize together rather than forming a mechanical mixture of D- and L-crystals. This should favor the adsorption of the enantiomers as heterdimers, which is necessary for removing equal amounts of each enantiomer from solution. Spectra of pure enantiomers of N-acetyl-Alanine change significantly upon adsorption while their racemate’s one carbonyl peak at 175 ppm is replaced with three when adsorbed, as is the Carbon peak at 51 ppm. X-ray powder diffraction was used in order to determine the spatial orientation of the amino acid within the zeolite.
Nurses are now dealing with an increased workload due to increased patient acuity, nursing shortage, and staff shortage (Carayon & Gurses, 2008). Since working in the acute care setting, it has been observed that the care of patients can be challenging, complex, and demanding on the nurses providing care. There have been many instances where nurses verbalize that they are too busy and overwhelmed with the patient load they are given. Nurses are required to not only provide care for a physically ill patient, but also tend to their emotions and other needs. Along with providing care, nurses have to document interventions implemented, ensure that physician orders are adequate and correct to be implemented, ensure that medications are administered with no error, interact and plan the care of patients with other healthcare professionals, all while providing quality care and ensuring safety and health of their patients. Using Walker and Avant’s method on concept analysis, the author will explore the term workload and its relation and impact to nursing practice. The purpose for exploration of the term workload is to clarify how an increased workload impacts the nursing practice, nursing research, nursing education, and the healthcare organization. With use of Patricia Benner’s Philosophy of Clinical Wisdom and Five Stages of Skill Acquisition: From Novice to Expert, it can be used as a framework to address the issue of an increased workload on nurses working in an acute care setting. Evidence-based practice research has shown that there are interventions that can be implemented to help address the increased workload on nurses.

Reference

Author(s): Lauren Que, Mari Jo Ramirez, Jasmine Rios, Robert Senter and Deniz Cizmeciyan
Department/Program Chair: Eric Stemp
Department/Program: Physical Sciences and Mathematics
Presentation: Poster

Adsorption of D and L enantiomers in zeolites as heterodimers opens the possibility of further enantiomeric enrichment of a solution with a modest enantiomeric excess. 13C CPMAS spectrum of D- and L-N-acetyl methionine exhibit peaks at 170, 55 and 30ppm for the carbonyl, and carbons respectively, while the racemic mixture shows a second peak for the carbonyl group at 165 ppm implying that the latter crystallizes as a racemic compound. This gives reason to speculate an increased tendency for heterodimer adsorption onto the zeolite. Preliminary thermogravimetric analysis shows that roughly 5% of the initially present amino acid is adsorbed. Differential Scanning Calorimetry exhibit endothermic and exothermic phase transitions at 330°C and 520°C respectively. The fingerprint of the racemic compound is discernible in the spectrum of the mixture adsorbed in the zeolite, supporting the hypothesis that adsorption occurs in the form of heterodimers. Also, when pure D- or L-N-Acetyl methionine is adsorbed in the zeolite the carbonyl peak splits into two peaks, which implies that the amino acid is adsorbed in magnetically nonsymmetrical environments within the zeolite. Powder X-ray diffraction was used to determine the orientation of the adsorbed amino acid. Enantiomeric enrichment by achiral zeolites presents a previously unexplored avenue in the study of prebiotic development of enantiomeric purity. This mechanism can also be useful for the pharmaceutical industry where enantiomeric purity is important.
Alternative splicing is one of the mechanisms in which different combinations of exons are created post-transcription. These exon combinations are then translated into isoforms, which may code for multiple proteins. This is an interest in biomedical research because errors in alternative splicing may cause degenerative diseases and other illnesses. The alternative splicing factor (ASF/SRSF1) plays an essential role in the posttranscriptional modification of RNA to assist in cellular development and contribute to increased proteome diversity. ASF/SRSF1 participates in the alternative splicing of Tau proteins into multiple isoforms, which when dysregulated can lead to neurofibril degeneration and possibly Alzheimer’s disease. One of the factors that contribute to the regulation of Tau proteins is the phosphorylation of ASF/SRSF1 by protein kinase A (PKA). Previous evidence has shown that other kinases intimately connected with ASF/SRSF1 have unique directional, processive patterns when phosphorylation occurs. Because of this, we set out to investigate phosphorylation patterns of the PKA and ASF/SRSF1 interactions. Series of assays were performed using radio-labeled ATP and lysyl endoproteinase in conjunction with a variety of specifically designed digestible ASF/SRSF1 mutants. Analysis of the data shows that PKA phosphorylates 3-5 of the possible 15 serine-arginine sites in the RS domain of ASF/SRSF1. Digestion assays yielded no evidence of a directional preference along the RS domain during the phosphorylation and that PKA shows no preference among the serines within ASF/SRF1. Our results show that PKA seems to be non-directional and non-preferential while phosphorylating ASF/SRSF1.
Ecological concerns are always of the upmost importance within the scientific community. Major environmental catastrophes such as the recent explosion of the oil rig Deepwater Horizon (April 2010) in the Gulf of Mexico, and the subsequent oil spill, generated a lot of attention. Spilled oil naturally scatters via storms or currents over time but chemical dispersants accelerate the diffusion process. They are commonly used to try to impede an ecological catastrophe. Dispersants are mainly surfactants that concentrate at the oil-water interface to alter the existing equilibrium between natural dispersion and emulsification thus fragmenting the oil film into smaller droplets. This process allows the oil spill to easily and naturally break down over a shorted time. Our objective is to develop original surfactants, (amphiphilic molecules made of a greasy chain and a polar head) for the use previously mentioned. Herein, we propose to modify common ester-containing surfactant by the inclusion of a hypophosphite ester groups inside the carbon chain as a mimic for the ester group. The synthesis of our cationic phosphorus-based surfactants involves the palladium-catalyzed hydrophosphinylation of brominated olefins, followed by the reaction with a tertiary amine. The methodology will be achieved by variation of C-C chain length and localization of the phosphorus moiety within the molecule. Preliminary results have shown that heavily substituted alkenes are poor substrates in the palladium-catalyzed hydrophosphinylation. In contrast, 5-bromo-1-pentene is a good substrate, with 100% 31P-NMR yields for the ethyl (5-bromo-pentyl) phosphinate and (5-bromo-pentyl) phosphinic acid synthesized. Further analysis of their colloidal properties will be probed using diffusiometry and conductivity measurements. Finally, liquid crystalline samples will be investigated by optical polarization microscopy and small-angle X-ray diffraction.
Polycomb group genes are highly conserved and control chromatin structure and the proliferation of cells. Those genes encode subunits of multi-protein complexes that act as transcriptional repressors. Polycomb Repressor Complex 1 includes Ring1A, Rnf2, Bmi1 and Mel18 proteins. Ring1A and Rnf2 are overexpressed in cancer and have ubiquitin ligase activity. In this work we examined the levels of Ring1A and Rnf2 in biopsy samples from different stages of prostate cancer. Our results show that the levels of Ring1A are increasing as the prostate cancer progresses. However, the levels of Rnf2 stay the same. Previous work suggests that Ring1A and Rnf2 are ubiquitin ligases and their activity is regulated by Bmi1 and Mel18 (Elderkin et al., 2007, Wei et al., 2006). To test this hypothesis, we cloned, overexpressed, and purified Ring1A and Rnf2 as well as Bmi1 and Mel18. We use these proteins to examine how the ubiquitin activity of Ring 1A and Rnf2 on histone H2A changes in the presence of Bmi1 and Mel18. By determining this relationship, we can gain further insight on the role of Polycomb proteins in the progression of prostate cancer.
Although peer harassment is linked with increased peer rejection and decreased self-esteem, previous studies have shown that social support from a close friend often protects against these negative consequences (Nangle et al., 2003; Glick & Rose, 2011). However, these studies often focus on friendship quality, or being able to share personal experiences and feelings with a close friend, but do not directly test its mediating role, especially among girls. In addition, the role of friendship quantity (number of friends) has not been addressed.

In this study, we tested a conceptual model that examines the relationships among peer harassment, social support, and self-esteem among adolescent girls. We proposed that the negative relationship between peer harassment and self-esteem is mediated by two types of social support: friendship quality and friendship quantity.

Participants were 231 girls from a middle school in southern California. All students completed surveys that assessed their perception for peer victimization (Neary & Joseph, 1994) and self-esteem (Harter, 1985). Students also completed multiple measures to assess friendship quality and quantity (Harter, 1987, Hoza, Bukowski & Beery, 2000).

Multiple regression analyses conformed to Baron and Kenny’s (1998) steps for assessing mediation. First, victimization was found to be a significant predictor of decreased self-worth (B =-.235, p <.001). When social support mediators were included, this relationship was reduced significantly (B =-.097, p =.002). Both friendship quality (B = .076, p <.05) and quantity (B =.237, p <.001) were found to be significant partial mediators. That is, higher quality of friendship and the greater number for friends function as a proximal predictor of self-worth.

These results suggest that high quality friendships and being connected with multiple peers both function as a protector against the negative impact of peer harassment. Implications regarding the roles of close friends and multiple friendships are discussed.
This poster project attempts to shed light on the innumerable mysterious and rare facets of the art of Origami; and further tries, through the art of origami, to demonstrate the hidden and seemingly unlikely connections between Art, Science, and Culture. Further, and more specifically, it also attempts to point out some obvious misconceptions and misperceptions that people have when perceiving the art of Origami and its significance and connection to the many layers of various scientific, linguistic, cultural, behavioral, and artistic fields of study.
Investigation of protein-protein interactions in the first steps of the tetrapyrrole pathway

Author(s): Esthella Flores, Brittany Escobar, Ariella Aslan, Cathy Garcia
Mentor: Luiza Nogaj
Department/Program Chair: Jennifer Chotiner
Department/Program: Biological Sciences
Presentation: Poster

The tetrapyrrole pathway leads to the production of hemes and chlorophylls. Intermediates in that pathway are toxic and unstable in the cell and their overexpression leads to light sensitivity. The mechanisms of substrate channeling and protein-protein interactions are well documented in all cells but are not well established in the tetrapyrrole pathway. Very likely, all of the intermediates in the tetrapyrrole pathway are channeled without being released into the cellular environment. To test this hypothesis we cloned, overexpressed and purified four enzymes from the first steps of the pathway â€“ GTS, GTR, GSAT, and PBGS. Using native gels and enzymatic activity assays, we will examine the interactions between those proteins.
Initiation of Palliative Care Consultations in the Intensive Care Unit

Author(s): Lisa Frost
Department/Program Chair: Marsha Sato
Department/Program: Nursing
Presentation: Poster

Landmark studies have demonstrated that even with the highest healthcare spending per person in the world, caregivers of those who have suffered with life-threatening illness are reporting suboptimal care (Last Acts, 2002; SUPPORT Principle Investigators, 1995). Palliative care is a medical specialty that has been increasingly utilized in the United States to help improve quality of life while meeting the complex needs of patients and their families who are suffering with life-threatening illness. The purpose of this study was to investigate whether nurses working in the Intensive Care Unit (ICU) and Step-down Unit (SDU) of a 377-bed acute care teaching hospital with a palliative care team, could identify criteria for palliative care initiation. This research also explored nurses’ level of comfort with end-of-life discussions and what types of variables nurses see as a barrier to the initiation of palliative care. Eighty-four nurses at the facility of study were surveyed. Statistical analysis was conducted using Two-sided Wilcoxon Rank Sum Tests and Chi-squared tests for continuous and categorical data respectively. Based on the study findings, this researcher confirmed an educational gap in the nurses’ knowledge of palliative care. Multiple variables were confirmed to be barriers to initiation of palliative care, most significantly nurse’s avoidance of dying patients and being worried that the physician may not agree with the initiation of palliative care. Furthermore, this research also demonstrated a need for additional education in end-of-life care communication.
Le Puy lace - A light, delicate and open “guipure” was produced very early in the history of lace. Although the definition of lace connotes a frail and delicate entity, the Sisters of St. Joseph of Carondelet have demonstrated the antithesis in their mission and ministries. In 1650, Fr. Jean-Pierre Madaille, a Jesuit priest, founded the Seours de St. Joseph in LePuy, France and for over three centuries, their vision has honored the courage and resilience of women. The Sisters of St. Joseph of Carondelet (CSJ) began making lace as a source of income and as a trade to support the women of LePuy. Lacemaking became a woman’s way to attain independence and escape poverty. The lore and tradition of lace making continues today and is considered a vital part of the heritage of the Sisters of St. Joseph. Committed to the tenets of social justice, the Sisters of St. Joseph have improved the status of women and children on a global level. Their ministries focused upon empowering women and to take up every good work of which a woman is capable. This presentation will provide a pictorial chronicle of the ministries of the Sisters of St. Joseph in health care, education and social services and their quest for social justice for all.
The purpose of our project was to compare patient assessment techniques using Sr. Callista Roy’s oxygenation assessment and Faye Abdellah’s general assessment on the same individual. This presentation will guide nurses in patient assessment as the first step in creating a plan of care based on the patient’s needs. Our presentation is primarily intended for nurses; however others will be interested in the comparison of the theoretical models and their practical application. The project focused on the backgrounds of each nursing theorist, including their individual nursing paradigms, nursing, person, health, and environment and methods of patient assessment. The detailed comparison noted both the strengths and weaknesses of each theorist. Our findings emphasized the patient’s ineffective behaviors (according to Roy) and problems (according to Abdellah). Practitioners can use findings from our assessment, and create a plan of care that will benefit both the short-term and long-term health of patients. After viewing our presentation, the participant will not only have a better understanding of Roy and Abdellah’s theories, but will be able to assess a patient using both models.
Caring Communication: Improving Outcomes for the Human Diabetic

Author(s): James Kennett
Department/Program Chair: Sarah Shealy
Department/Program: Nursing
Presentation: Poster

Introduction. The purpose of this study was to identify the influence of caring communication for people living with diabetes (PLD) and the relationship to diabetic outcomes. Caring communication has not been studied for improving diabetic outcomes. Contemporary evidenced-based management of PLD is guided by randomized control trials (RCTs), however people do not do what they told, they need to be included in their care.

Methods. A survey design study was done. A sample of 107 patients with diabetes from two clinics in Southern California participated. The sample was recruited from a naturally occurring appointment schedule and patients were asked to complete a short survey. From the participant’s completed survey, their clinical record was reviewed for additional data.

Results. Overall the sample in the study had diabetic outcomes close to the American Diabetic Association (ADA) criteria. The survey indicated a high level of caring communication. Males approached significance having an Hemoglobin A1c (A1c) within normal limits \( \chi^2 (1) = 3.73, p < .053 \) compared to females. Gender, age, length of time with diabetes, and caring communication predicted 65.3% of having an A1c within normal limits; length of time with diabetes, synergy, sharing, reciprocity, and gender predicted 64.3% for having an A1c within normal limits; caring communication, gender, age, and marital status predicted 69.3% of cases for having a systolic blood pressure (SBP) within normal limits; and time with diabetes, gender, synergy, sharing, and reciprocity predicted 68.3% of the cases having a SBP within normal limits.

Conclusions. Caring communication does influence diabetic outcomes. Females tend to have a better A1c than males. Furthermore, as one lives longer with diabetes, their outcomes tend to be better than newly diagnosed people with diabetes. Caring communication constitutes shared decision-making, exploring possibilities, and not feeling intimidated by the healthcare provider.
Nursing profession is known to be a selfless profession that attends to those who are in need of care. One would hope that nurses will possess qualities of professionalism, compassion, and respect to all. The reality is that there are nurses who practice incivility in their professional practice. It is a problem that exists and it is a problem that needs to be addressed to bring the standards of nursing profession up to par. According to the Joint Commission (2008), disruptive behaviors that include verbal outbursts, physical threats, and passive behaviors can weaken collegial relationships and compromise patient safety. Civil behavior is the goal we need to strive for to improve nursing profession so that patient care is the focal point of the nursing practice. Nursing literature offers many strategies to improve civility in the nursing profession. These strategies include organizational interventions, individual nursing interventions and interventions used in the nursing education setting. There are benefits from improved civility in the nursing practice. The benefits ultimately affect the patients. Since nurses are a reflection of their work, civility must be integrated in nursing profession.
TRIO is a set of federally-funded college opportunity programs that motivate and support first-generation, low-income and disabled students in their pursuit of a college degree. More than 840,000 students from sixth grade through college graduation are served by more than 2,900 programs nationally. TRIO programs provide academic tutoring, personal counseling, mentoring, financial guidance, and other supports necessary for educational access and retention. TRIO programs provide direct support services for students, and relevant training for directors and staff. The TRIO programs were the first national college access and retention programs to address the serious social and cultural barriers to education in America. (Previously only college financing had been on policymakers' radar.) The initial three TRIO programs (Upward Bound, Talent Search and Student Support Services) originated between 1963 and 1968. Together, this TRIO of federally-funded programs encouraged access to higher education for low-income students. By 1998, the TRIO programs had become a vital pipeline to opportunity, serving traditional students, displaced workers, and veterans. The original three programs had grown to eight. Recently funding for TRIO programs has become highly at risk. Although the programs have decades of documented success in ultimately graduating students with four year college degrees, TRIO funding is suffering compared to newer undocumented programs.

WHY DO WE NEED TRIO PROGRAMS?
1) The United States needs to boost both its academic and economic competitiveness globally.
2) Low-income students are being left behind.
3) The growing achievement gap in our country is detrimental to our success as a nation. Come learn about the history and success of TRIO programs and how YOU can make a difference in keeping these vital programs funded.
Oxidative DNA damage contributes to aging, cancer, chronic inflammatory diseases, and degenerative diseases. Guanine is particularly vulnerable to oxidation, forming guanine radicals which can form irreversible crosslinks to proteins. DNA-protein crosslinks are an understudied yet significant form of oxidative damage. Here, we sought to use fluorescence polarization to detect DNA-protein crosslinking caused by guanine oxidation. The unnatural base, 2-aminopurine (Ap), is a fluorescent adenine derivative and was incorporated into a 29-mer oligonucleotide. After annealing with its complement, the aminopurine-containing DNA was subjected to flash-quench treatment in the presence of histone of poly-Lysine. Without irradiation, the Ap duplex gives a fluorescence polarization value of 0.049. In the presence of histone of poly-Lysine, the numbers increase to 0.072 and 0.058, consistent with crosslinking to DNA.
Utilizing public health nurses to reduce postpartum depression: An international comparison of nursing practice with implications for health care reform.

Author(s): Mary Molle and Kari Glavin
Department/ Program: Nursing
Presentation: Poster

Aim. This poster presentation considers the value of prevention, and early intervention in reducing postpartum depression in Norway; compares this to the standard of care in California; and derives implications for future education of public health nurses and nursing practice.

Background. Depression is a common condition following childbirth and may have negative consequences for the child’s development, the woman’s health and the relationship between the parents. Supportive counseling by public health nurses may be a desirable treatment alternative and may prevent longer-term postpartum depression. U.S. evidence shows that home visitation by professional nurses can improve child health outcomes. However, care widely provided in California is lacking this type of preventive nursing care.

Method. This paper examines both observational data and experimental research regarding Norwegian public health nurses with specialized training providing supportive counseling to women with Edinburgh Postnatal Depression Scale (EPDS) scores at 6 weeks postpartum. Post-tests at 3 and 6 months postpartum showed the depression score decreased statistically significantly in the experimental group compared to the comparison group at both time periods.

Discussion. Norwegian experience is compared to existing studies recommending nursing home visitation in U.S. populations. These findings will be used to make recommendations for education of nursing students as well as consider implications for prevention and early interventions, which focus on bachelors prepared nurses, with the potential to improve health at reduced cost.

Session Educational Objectives: 1) Compare supportive public health nursing care of postpartum women in Norway and the United States. 2) Consider implications for health care reform in the United States. 3) Recommend enriching experiences for the education of nursing students.
Regenerative medicine is the development of replacing or regenerating human cells; aspects of it can help patients such as those with autoimmune disorders to produce cells they lack. Understanding multipotential hematopoietic stem cell lineage in relation to cell cycle is vital to the continual growth and advances of regenerative medicine. In our study, a murine promyeloblastic cell line model system (32D/Cl3) was cultured and analyzed under various conditions. 32D cells are multipotential hematopoietic cells that are dependent on interleukin-3 (IL-3) for normal growth and survival. We observed 32D cells under several different conditions including the presence of IL-3, depletion of IL-3, and an addition of G-CSF in the absence of IL-3; such conditions promote 32D cells to undergo cell cycle progression, apoptosis, and terminal differentiation, respectively. Under these conditions the effects of inosine monophosphate dehydrogenase (IMPDH), an enzyme that catalyzes the initial rate-determining step in de novo guanine ribonucleotide biosynthesis, was investigated. Nocodazole and hydroxyurea are drugs that block cell cycle progression; they were used in an effort to synchronize cells to G2/M and S phase, where they were further treated with an IMPDH inhibitor. These treatments allowed cell cycle analysis to identify effects of IMPDH in relationship to differentiation and lineage commitment. We found that IMPDH inhibitors caused cells to accumulate in S phase of the cell cycle. Future studies will include separating cells at different cell cycle stages by elutriation and then determining cell cycle dependent differences in the expression of hematopoietic lineage-specific genes, including Epo-R, GATA1 (erythropoiesis) and G-CSF-R, CEBPa and PU.1 (granulopoeisis). In conclusion, Identification of lineage-specific genes throughout the cell cycle provides clarity of the relationship between lineage commitment and cell cycle.
DNA adenine methyltransferase (Dam) is a bacterial enzyme that methylates the adenine nucleotide within GATC sequences using S-adenosyl methionine as the methyl donor. Dam is important for DNA replication timing, mismatch repair, and gene expression in Escherichia coli. Dam is very efficient at methylating the bacterial chromosome and has been shown to act processively in vitro (1). However, how Dam bypasses the numerous DNA-binding proteins it encounters as it migrates along the chromosome searching for GATC sites is not understood. We set out to investigate how Dam’s methylation efficiency is affected by the presence of the nucleoid-associated protein Lrp. We chose Lrp since it is widely distributed along the chromosome, binding both specifically and non-specifically. Furthermore, when bound to multiple specific sequences, Lrp causes dramatic bending of DNA (2) which may improve Dam’s efficiency by bringing GATC sites closer together. Using in vitro assays, we compared Dam’s ability to processively methylate two consecutive GATC sites in the presence and absence of Lrp. We have found that non-specific binding of Lrp causes Dam to be more processive. This suggests that Dam may be able to dislodge nonspecifically-bound Lrp as it moves along the chromosome searching for GATC sites. We are currently investigating whether specific binding of Lrp between two consecutive GATC sites affects Dam’s processivity. Depending on our results we will modify the Lrp specific sites to assess the influence of DNA bending on Dam’s methylation efficiency. Our results will help in understanding how Dam diffuses along the chromosome in vivo. Furthermore, our findings will provide insight into mechanisms that other DNA-modifying enzymes use to access their specific sites in the cell.
This paper will present an instructional model that was utilized to instruct statistics and geometry to future elementary school teachers from a transdisciplinary perspective. This project took place primarily in a charter school where future teachers were able to introduce basic skills in geometry and implement environmental solutions to runoff pollution by engaging charter school students in building rain gardens at the community center. The concept that teachers can connect course content to real world problems and concurrently contribute to the development of students' critical thinking skills has been discussed previously elsewhere but little has been done to implement this concept on the professional development curriculum of future elementary school teachers. The charter school students’ progress was analyzed and discussed as well as learning outcomes assessment based on presentations at the charter school. This instructional model emphasized the importance that future teachers implement systemic thinking to include subject content and practical real world problems in order to develop creative and critical thinking skills in our children.
Survey of MSMC Accelerated Bachelors of Nursing Graduates Regarding Education Received and Current Status: 1996-2009

Author(s): Sarah Shealy, Mary Sloper, Katie Hoegeman, Vanessa Wanser
Department/Program Chair: Sarah Shealy
Department/Program: Nursing
Presentation: Poster

Accelerated Bachelors of Nursing (ABSN) programs, are designed for college graduates of any major to earn a second bachelor’s degree in nursing in 12-15 months, and are considered by many as a solution to fill the current and anticipated shortfall of registered nurses in the U.S. Mount St. Mary’s College’s program, one of the first programs in the country, was the first on the West Coast. The first class started in 1995, graduated in 1996. To date no significant evaluation has been done on graduates of these programs to assess the preparation received for entry into practice and their current positions in nursing. This study surveys the Mount’s ABSN graduates through 2009. The survey explores satisfaction with the program in a number of keys areas, and overall commitment to the profession as measured by current practice in nursing and further education and/or certifications. Several variables were tested to determine success and the implications for admission and program design. Results show overall satisfaction with the program and preparation for practice, and that the program graduates are generally satisfied with their careers in nursing. The survey also explored relationships between students life responsibilities, support systems and program performance, as well as identifying aspects of the program that were particularly challenging. Results will be used to improve program orientation and programmatic changes.
Chemistry of life depends on chiral molecules. While one version of a molecule is vital, its mirror image is either useless or toxic. How this chirality originated is a fascinating question whose answer is still unknown. The separation of one enantiomer (chiral molecule) from the other is very important in medicine today because the incorrect enantiomer is either useless or may cause detrimental side effects, even death. Zeolite lattices do not prefer one enantiomer over the other, and adsorb the enantiomers equally well. However, if the D and L enantiomers adsorb together as a heterodimer (a complex made of two subunit molecules, in this case D and L), we can use that tendency to remove equal amounts of enantiomers, leave only the excess enantiomer in the solution. We used NMR, thermogravimetric analysis (TGA), Differential Scanning Calorimetry (DSC) and X-ray diffraction to explore the adsorption behaviors of D, L, and DL N-acetyl Leucine into Zeolite NaY. The solid state NMR spectra of the pure D and L illustrated the same results as the racemic mixture of N-acetyl DL Leucine. Thus, N-acetyl DL Leucine forms a conglomerate crystal of pure microcrystals of pure D and L. Recent data shows that the racemic mixture displays the same NMR spectrum when adsorbed in Zeolite NaY indicating that they are adsorbed as homodimers. Preliminary Thermogravimetric Analysis (TGA) data exhibits 8% adsorption of the amino acid. Exothermic decomposition of the sample at 290°C is apparent with DSC. X-Ray diffraction may also be utilized in order to better understand the specific microenvironments of the free and adsorbed amino acids D, L, and DL N-acetyl Leucine.
Analysis of trnE gene promoters for their role in the tetrapyrrole and protein synthesis pathways.

Author(s): Simone Thomas and Luiza Nogaj
Department/Program Chair: Jennifer Chotiner
Department/Program: Biological Sciences
Presentation: Poster

The tetrapyrrole pathway leads to the production of hemes and chlorophylls. 5-Aminolevulinic acid (ALA) is the first committed precursor in this pathway. In plants, algae, and most bacteria, ALA is generated from glutamate and tRNAGlu. Therefore, glutamyl-tRNAGlu is necessary for protein production and for the first step of the tetrapyrrole biosynthesis pathway. For protein synthesis, EF-Tu interactions with tRNAGlu assure its entrance into the ribosome. However, it is not known how Glu-tRNAGlu is channeled into the tetrapyrrole pathway. C. reinhardtii has two tRNAGlu genes but only one of them has been characterized. Previous studies in other organisms suggest that different tRNAGlu could be dedicated to protein and tetrapyrrole synthesis. In C. reinhardtii it is possible that one tRNAGlu species is dedicated to protein production and the other to the tetrapyrrole pathway. To test this hypothesis, we examined the two trnE genes and their promoter sequences. Here, we show that the two tRNAGlu genes are surrounded by entirely different flanking sequences, presenting the possibility that they might be expressed differently. We also show the cloning of tRNAGlu loci and our investigation of their expression levels.
Implementation of a Mobility Protocol to Improve Activity Level in the Post Operative Oncology Patient

Author(s): Carolina Uranga
Mentor: Mary Molle
Department/Program Chair: Marsha Sato
Department/ Program: Nursing
Presentation: Poster

Patient mobility and activity has been recognized as a key component of the patient's recovery process and some of the postoperative benefits of early ambulation include prevention of deep vein thrombosis, pulmonary emboli, and improved muscle tone (Morris, et al., 2010). The purpose of this study was to devise and implement a mobility protocol to improve activity level in the post-operative oncology patient by guiding clinicians with mobility frequency, duration and distance. The research design was quasi-experimental, quantitative, and descriptive following implementation of a mobility protocol. The participants were oncology nurses working on two surgical units and their retrospective postoperative oncology patients. The project had two phases, the first phase was the educational sessions provided to both surgical units on the mobility protocol and the second phase was the retrospective chart audit. The educational sessions pre and posttests indicated an educational need was met and satisfied. The retrospective chart audit data analyzed was: activity orders written, types of activity orders written, number of times the patient ambulated, and distance ambulated. The data showed poor results with respect to patient activity level and nursing documentation of activity, frequency and distance. Also, the type of activity orders written, were inconsistent with the mobility protocol. The chart audit data sample size was small and incomplete, which may have affected the overall data analysis. The small sample size did not allow for adequate quantitative analysis. Study recommendations include further reinforcement of the mobility protocol to nursing staff including nurse’s aids and physicians.
Oxidative damage can induce DNA protein cross-linking. Here, we explored whether resveratrol can inhibit oxidative cross-linking between DNA and proteins. In the flash-quench method, the intercalator \((\text{Ru(phen)}_2\text{dppz})^{2+}\) \([\text{phen} = \text{phenanthroline}, \text{dppz} = \text{dipyridophenazine}]\) is excited with blue laser light, thus releasing an electron to the quencher \((\text{Co(NH}_3)_5\text{Cl})^{2+}\). The oxidized intercalator then extracts an electron from guanine and the guanine radical then reacts to produce DNA-protein cross-links. In this study, samples containing \((\text{Co(NH}_3)_5\text{Cl})^{2+}\), histone, \((\text{Ru(phen)}_2\text{dppz})^{2+}\), and calf thymus DNA were subjected to flash quench treatment. Cross-linking was detected with gel shift assays. DNA, pUC19, subjected to the flash quench technique decreased greatly in mobility, with a considerable amount of cross-linked material visible within the wells. In the presence of an aqueous extract of resveratrol, or a solution of pure trans-resveratrol, cross-linking is strongly inhibited and the DNA runs as a single band. This inhibition is maintained out to significant dilutions of the resveratrol extract and is not due to trivial effects such as interference with the flash quench oxidation process or absorption of the laser light used to initiate oxidation. Inhibitory effects of pure resveratrol are observed down to micromolar concentration. One likely explanation for these results would be reduction of the guanine radical by the phenol ring. Nanosecond transient absorption measurements indicate formation of a species with absorbance near 450nm, consistent with production of a phenolic radical. The chemical oxidation of resveratrol has been examined via titration of Cerium (IV) Nitrate. Further attempts to characterize resveratrol oxidation products on a longer timescale are underway.