



# URSA

Undergraduate, Research,  
Scholarship and Arts.  
Benedictine University

## 2014 Presentation Schedule

### 12:00-1:30 pm – Krasa Presentation Room

12:00-12:15

**Harjot Sangha**

“Dental Care Disparities”

Many factors influence the availability and quality of dental care available, having many implications that go beyond one's oral health. My research focuses on the strategies and knowledge that will lessen the disparity in available and quality of dental care that exists.

*Faculty sponsor: Elizabeth Kubek*

12:15-12:30

**Imran Akhtar, Ayesha Badar, Nicole Framarin**

“Is Bile Acid Toxic To The Cells?”

In pathological conditions such as in Crohn's disease or ulcerative colitis, excessive bile acid accumulate in the colon and disrupts the balance between absorption and secretion, and causes an increase in fluid secretion resulting in diarrhea. In this study we studied whether the bile acids increased secretion by perturbing the epithelial barrier via a cytotoxic effect on the intestinal cells by measuring the release of lactate dehydrogenase from human colon carcinoma cell line (T84) that were grown to confluency in tissue culture plates and treated with varying concentrations of bile acids for different times. The results from this study showed that there is a time-and dose-dependent cytotoxic effect of various bile acids on T84 cells, particularly at pathological doses -unconjugated bile acids were more toxic than the conjugated counterparts.

*Faculty sponsor: Jayashree Sarathy*

12:30-12:45

**Julie Carroll**

“Developing an experimental system to test drugs for McCune-Albright Syndrome”

McCune-Albright Syndrome (MAS) is a human genetic disorder that causes constitutive activity of the Gs-alpha protein, resulting in elevated levels of cAMP. The protein has been modeled and pockets of the protein that can be altered in order to suppress its activity have been identified. The focus now is developing an experimental system to test cellular responses to drugs targeting these specific pockets.

*Faculty sponsor: Robin Rylaarsdam*

12:45-1:00

**Mary Beth Manganiello**

“Athina Fitness Center”

A comprehensive integrated marketing communications (IMC) plan was developed for a service originally conceived of by the author to introduce a fitness center to the market that will fill a gap that is not currently being served by other fitness organizations. There is a large gap in the market for young women who are serious about their fitness. Athina offers services to women who are serious about their fitness and nutritional health as well as their psychological health.

*Faculty sponsor: Nona Jones*

1:00-1:15

**Elizabeth Lira**

“Integrated Marketing Communications Plan: YoBar Candy Bar”

A comprehensive integrated marketing communications (IMC) plan was developed for a product originally conceived of by Elizabeth Lira: the YoBar. The plan consisted of a corporate image and brand strategy, including an original brand name; an advertising design, completed with a description of the theoretical frameworks, types of advertising appeals to be used, executional frameworks, and the selection of appropriate media; a description and explanation of the promotional tools to be incorporated, including sales promotions and public relations and sponsorship programs; and an explanation of how the plan, once implemented, will be evaluated. In providing these elements, the ultimate goal of this marketing plan was to create brand awareness and develop positive relationships with channel members.

*Faculty sponsor: Nona Jones*

1:15-1:30

**Byambadelger Batmagnai, Dan Busse, Annette Dzielski, Neha Khattar**

“Restaurant Kitchen Efficiency”

This research proposal uses discrete event simulation to analyze the efficiency of a model restaurant kitchen during peak dinner hours. We are using the Extend6LT software to assist us in developing an interactive visual model to give us an understanding of kitchen productivity.

*Faculty sponsor: Deborah Cernauskas*

### **1:30-3:00 pm – Krasa Presentation Room**

1:30-1:45

**Philip Harmel, Ian Martinek**

“Correlation of Body Size and Life Habits in Trilobites”

The manner by which a Trilobite feeds, whether it is a carnivore or microbivore, ultimately governs not only the Trilobite’s matured size, but also the Trilobites preference on its feeding location. Initial analysis indicates an optimistic correlation that Trilobites which are larger tend to be carnivores and venture throughout the habitat to obtain food while those Trilobites which tend to be smaller are microbivores and occupy a discrete location when feeding.

*Faculty sponsor: Phil Novack-Gottshall*

1:45-2:00

**John McCartan, Chris Veselka**

“Effects of morphological disparity among trilobites on survivorship during the late Ordovician mass extinction”

In this study, we build upon an existing dataset, adding 25 body measurements to new trilobites in order to analyze the relationship between survivorship and morphological disparity, a multivariate measure that looks not only at size, but also general shape. For example, it is possible that trilobite victims had a wide range of body sizes, but all shared similar body shapes. Using principal components analysis to focus on morphological disparity, our analysis indicates a small but potentially interesting link between survivorship and increased size, as measured by the distance between the eye and rear of the cephalon. We also demonstrate that surviving trilobites may have had slightly greater overall morphological disparity, although the difference is not statistically significant.

*Faculty sponsor: Phil Novack-Gottshall*

2:00-2:15

**Nicole Framarin, Sydney French**

“Effects of bile acid on epithelial barrier function in an inflammatory human colon model”

The human colon is exposed to conjugated and unconjugated bile acids and excess bile acids, as seen in ulcerative colitis and Crohn’s disease, can increase fluid secretion and perturb the epithelial barrier. We

are currently studying the involvement of the tight junctions in mediating the effects of luminal bile acids and we hypothesize that high concentration of luminal bile acids directly loosens tight junctions (as measured by a drop in transepithelial resistance [TER]), and this is enhanced by the presence of pro-inflammatory cytokines. Indeed, cytokines did loosen up the tight junction and this was exacerbated in the presence of high concentrations of bile acids in the lumen. These studies will provide the basis for the role of bile acids in inducing diarrhea in inflammatory diseases.

*Faculty sponsor: Jayashree Sarathy*

2:15-2:30

**Ayesha Badar, Nicole Framarin, Sydney French**

“Exposure to primary, but not secondary bile acids is more toxic to the human colon carcinoma cells”

Primary bile acid, chenodeoxycholic acid (CDCA), made in the liver and released into the duodenum where it aids with fat absorption, is recycled in the terminal ileum. Less than 5% of CDCA enters the colon where it is converted to lithocholic acid (LCA) by the bacteria and LCA is considered to an anti-secretory agent. Using lactate dehydrogenase assay, we have found that a 0.5 and 1 hr exposure of CDCA (5-500mM) was more toxic than LCA and, using flow cytometry, we are currently studying the effects of bile acids on apoptosis. Knowledge of LCA’s effect on apoptosis and cell death will help us identify whether it can be potentially used as an anti-diarrheal agent.

*Faculty sponsor: Jayashree Sarathy*

2:30-2:45

**Anoop Takher**

“Sequence Enabled Reassembly in detecting damaged/modified DNA”

Sequence Enabled Reassembly (SEER) of proteins can be used to detect specific sequences of DNA, however the SEER process can also be used in the detection of damaged/modified DNA. The SEER system involves the protein beta-lactamase, which is split into two halves. Each half is fused to a protein domain that recognizes DNA. One half of the beta-lactamase is fused to a zinc-finger protein that recognizes a particular sequence of DNA. The other half of beta-lactamase is fused to High Mobility Group Box domain 1 (HMGB1) protein which binds to damaged DNA. As the two halves of the split protein bind to DNA, they recombine and a detectable signal is produced indicating the site of damage on a given strand of DNA.

*Faculty sponsor: Scott Meyer*

## **1:30-3:00 pm – Krasa A**

1:30-1:45

**Chris Garrett**

“Rugged Packs IMC”

The objective of this project was to design an integrated marketing communications campaign for an original product or service. The integrated marketing communications (IMC) campaign is used to provide a unified message across all channels to the intended target market. The plan I developed consisted of a corporate image and brand strategy, including an original brand name; an advertising design, complete with a description of the theoretical frameworks, types of advertising appeals to be used, executional frameworks, and the selection of appropriate media; a description and explanation of the promotional tools to be incorporated, including sales promotions and public relations and sponsorship programs for a created a product called the Rugged Pack.

*Faculty sponsor: Nona Jones*

1:45-2:00

**Jonathan Acevedo, Calvin Bonewits, Billy Dixon, Kevin Hendricks**

“Business Analytics Project”

To inform students of the best available time to go workout.

*Faculty sponsor: Deborah Cernauskas*

- 2:00-2:15 **Steve Kositzky, Matthew Lemming, Jake Lemming, Dale Renshaw**  
 “El Burrito Mexicano”  
 To determine better staffing levels at peak hours of operation. To better suit El Burrito's customers. Also, to maximize profits.  
*Faculty sponsor: Deborah Cernauskas*
- 2:15-2:30 **Ash Bindra, Peter Drivas, Jonathan Jesse, Tom Scherschel**  
 “Restaurant/Bar efficiency improvement model”  
 Our objective is to model Friday nights at a bar and restaurant in Chicago (based on Cork & Kerry Bar and Grill). Our goal is to accurately model a current Friday evening's business and then make realistic alterations to the model that will increase the number of customers served and revenue generated.  
*Faculty sponsor: Deborah Cernauskas*
- 2:30-2:45 **Xinwei Chen**  
 “Geometry of Quasigroups and Its Applications”  
 A quasigroup is a binary operation whose multiplication table is a Latin square. In this talk, we will see how one can use a Cayley graph to visually study properties of a quasigroup. We will illustrate how these graphs can be used to study the security of cryptographic schemes based on quasigroups, and show how they can be related to classification problems related to quasigroups.  
*Faculty sponsor: Ellen Ziliak*
- 2:45-3:00 **Bisma Mirza, Areej Reaz**  
 “Hadamard Matrices and their applications to Cryptography”  
 Hadamard codes are used for error detection and correction, when transmitting messages over insecure channels. In this paper we study Hadamard codes and bent functions, and how these are used in the Advanced Encryption Standard for secure communication. We also discuss other uses of these functions in cryptography.  
*Faculty sponsor: Manmohan Kaur*

### 3:00-4:30 pm – Krasa Presentation Room

- 3:00-3:15 **Derek Murphy**  
 “Do Gubernatorial Primary Debates Matter? Examining the Effects of Gubernatorial Primary Debate on Viewer’s Political Preference”  
 I utilized a paper survey to gauge debate effects on an audience of approximately 700 live viewers from one of the final Republican gubernatorial debates, which was held at Benedictine University. While a robust literature exists on debate effects in presidential contests, there has been very limited scholarship focusing on candidate debates in gubernatorial primary elections. My survey instrument allowed me to measure voters' predispositions, assessments of candidate performance in the debate, general attitudes and preferences about the candidates, as well as the debate's impact on likely vote choice.  
*Faculty sponsor: Phil Hardy*
- 3:15-3:30 **Meghan Nolan**  
 “An Experimental Study of Media Framing Effects on Public Opinions Toward Immigration Policy”  
 Issue framing and the effect it has on public opinion has been studied by many scholars. However, there is conflicting evidence as to the extent framing shapes individual opinions about specific issues, as well

as what factors might limit the effects of framing. Using an experimental design, I tested how much effect prototyped news articles with clear attribution of blame had on individuals' attitudes toward comprehensive immigration reform.

*Faculty sponsor: Phil Hardy*

3:30-3:45

**Joey Rose**

“Dorothy Day, *The Rule of St. Benedict*, and Holy Poverty”

The notion of voluntary poverty is found in both *The Rule of St. Benedict* and the life and writings of 20th century American journalist and Catholic activist Dorothy Day. This paper explores the points of comparison and contrast between the two ideas, and how each notion reflects Catholic ideology regarding a personal lifestyle of poverty. Ultimately, both lifestyles serve to remove the care brought about by the pursuit of material goods that creates an obstacle to the worship and service of God.

*Faculty sponsor: Christine Fletcher*

3:45-4:00

**Humdoon Choudhry**

“Metal-Replaced Myoglobin: Characterization of a New Oxidizing Intermediate and its Reactivity”

This research focuses on the chemistry with metal-replaced myoglobin and explores the question whether metal-replaced myoglobin can function as an enzyme rather than an oxygen-binding protein. Myoglobin was reconstituted with manganese (III) protoporphyrin and then reacted with a two electron oxidant meta-Chloroperoxybenzoic acid (mCPBA). This reaction was monitored through UV-vis spectroscopy which showed formation of an intermediate. Hydrogen atom abstraction was performed on dipenylhydrazine and 1, 4-Cyclohexadiene and kinetics on dipenylhydrazine and 1, 4-cyclohexadiene were monitored by UV-vis spectrophotometer. Oxygen transfer to Bis (4, 6-dimethyl- 3 sulfonatophenyl) (2, 4- dimethylpheylnly) phosphine (water-soluble phosphine) was also monitored by running kinetics. Ascorbic acid, one electron reductant, was reacted with the intermediate in order to further analyze the intermediate.

*Faculty sponsor: Kari Stone*

**4:30-5:30 pm – Krasa Presentation Room**

4:30-4:45

**Salman Abdul Majeed, Roman Mohammed**

“Spirituality and Mental Well-Being”

In a world of fast-paced living and constant struggles, people tend to find themselves constantly stressed over life's ambitions, goals, and difficulties. Consequently, more Americans have reported higher levels of anxiety and depression; although it appears to be unrelated, spirituality may have an important impact on peoples' mental distresses. This experimental study was devoted to the analysis of a possible causal relationship between spirituality, the manipulated independent variable, and mental well-being, the dependent variable.

*Faculty sponsor: Brian Patterson*

4:45-5:00

**Mary Belluomini**

“Availability of consumer sources of dietary vitamin D”

An environmental survey on vitamin D availability was conducted in a sample of supermarkets, and discount, high-end, and mega-stores in winter 2012-13 in investigators' locales. Nutrition facts labels (n=4567) cereals and dairy foods were the most frequently available vitamin D options (39.8% and 33% respectively), and vitamin D quantities in foods per serving were mainly either 40 (or 10% RDI) or 100 International Unites (43.3% of foods or 22.9% respectively). Diverse foods sources and fortification levels reinforce the need for consumers to check labels to foster adequate intake.

*Faculty sponsor: Karen Plawecki*

5:00-5:15

**Jermeen Wadie**

“Arthur J. Schmitt Scholarship Project - Interfaith Discussion”

In this event, speakers from six different religions will discuss and answer questions regarding The Role of Religion and God in One’s Life. The goal behind this event is to bring the members of the community together and bring harmony to them through the talks by the speakers, a fellowship meal, and followed by a discussion.

*Faculty sponsor: Eric Goodwin*