



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Full Abstract Book

Friday, November 15, 2019



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UNDERGRADUATE RESEARCH SYMPOSIUM

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***Welcome to the 2019
Seven Rivers Undergraduate Research Symposium!***

This Quick Reference is designed to help you make the most of today's Symposium. In addition to the materials found here, you can find the complete Seven Rivers Abstract Book, Award Evaluation Criteria, Lists of Student Presenters and much more on our website: www.viterbo.edu/sevenrivers.

If you have questions at any point throughout the day, please come to the Help Table in the Fine Arts Center Lobby or approach a volunteer for assistance (with the green nametags).

Thank you and we hope you enjoy today's celebration of academic achievement!



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Symposium Schedule

- 9:00-10:10am** **Registration** (*Fine Arts Center Atrium*)
- Light refreshments and breakfast will be provided.
 - Research posters may be set up at this time.
- 10:10am-11:20am** **Welcome and Keynote Address** (*Fine Arts Center Main Theater*)
- *Welcome*, Vice President of Academic Affairs Tracy Stewart
 - *Keynote Introduction*, Melissa Edgar, Pre-Med/Biology '21
 - *Keynote address: Dr. Paul Mueller*
 - **“Creating and Sustaining a Biomedical Ethics Research Program: Lessons Learned”**
 - *Closing and Symposium Reminders*, Colin Burns-Gilbert, Integrated Learning and Programs Coordinator
- 11:20am-12noon** **Break & Distribution of Lunches in the Fine Arts Center (FAC)**
- ** Lunch is provided for registered participants only ****
- Lunch seating available:
 - **Fine Arts Center:** Main Theater Lobby and Hospitality Suite
 - **Nursing Center:** Lobby, Room 195, Room 104, Room 103
 - Research posters available for viewing in the FAC Main Theater Lobby & Nursing Center Room 195.
- 12noon-2:00pm** **Oral Presentations** (*Nursing Center 101, 201, 202 & Fine Arts Center 204*)
- Presentations consist of a 10-12 minute talk followed by 3-5 minutes for questions. There will be a 5-minute break between presentations.
 - Quick References are available at the Help Table; the Alphabetical Listing of Presenters, Full Abstract Book, and Evaluation Criteria are available online at www.viterbo.edu/sevenrivers.
- 2:00-4:00pm** **Poster Sessions** (*Fine Arts Center Main Theater Lobby, Nursing Center 195*)
- Research and creative works posters will be staffed by student researcher(s).
 - Odd-numbered posters will be staffed for the first hour and even-numbered posters will be staffed for the second hour.
- 4:00-4:30pm** **Awards Social and Closing** (*Fine Arts Center Main Theater Lobby*)
- Join us for cake, punch, awards, and some relaxed time for socializing and networking.



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Lunch Locations

*While you are free to eat your lunch wherever you like,
the following spaces have been set aside for you
(see the campus map on the back page):*

Fine Arts Center Main Theater Lobby

Fine Arts Center Hospitality Suite

Nursing Center Room 195 and Lobby

Nursing Center Room 104 and 103

*You are also encouraged to peruse the research posters set up in
the Fine Arts Center Main Theater Lobby and Nursing Center
Room 195.*

*Please approach the Help Table or a Seven Rivers volunteer
(with the green nametags) if you have any questions.*

Oral Presentations by Room Start Time

Nursing Center Room 101		Facilitator: Kirsten Gabriel		Judges: Michael Parker & Dale Krageschmidt	
First	Last	Institution	Discipline	Start	
Ashlee	Jeffers	Viterbo University	Art	12noon	
Title: The Unique Print: Pushing the Traditions of Art through Monotypes					
Lauralee	Rood	Viterbo University	Religious Studies & Theology	12:20pm	
Title: Yahweh and the Concept of Herem in the Old Testament					
Carson	Skemp	Viterbo University	Spanish	12:40pm	
Title: Ruth Behar: Identities Lost and Found in Immigration					
Chase	Anderson	UW-Eau Claire	Environmental Studies	1pm	
Title: Demographics and Activities of Tourists in Mozambique					
Allison	Dunne	Viterbo University	Psychology	1:20pm	
Title: You Aren't Perfect: The Role of Basic Needs and Motivation on Perfectionism					
Laura	Weidemann	Viterbo University	Philosophy and Ethics	1:40pm	
Title: Ethical Eating: The What, How, and Why of our Food System					
Nursing Center Room 201		Facilitator: Jim Evans		Judges: Terresa Bubbers & Susan Cosby Ronnenberg	
First	Last	Institution	Discipline	Start	
Miranda	Myszka	Viterbo University	Education and History	12noon	
Title: Racist Stereotypes of African American Students in Wisconsin's Education System					
Migdalia	Simpson	UW-La Crosse	Psychology	12:20pm	
Title: Mixed in the Media: Media Representation and Self-Identity of Multiracial Individuals					
Chloe	Zielke	UW-Eau Claire	Sociology	12:40pm	
Title: Religion and Its Linkage to the Wellbeing of the Chinese Elderly					
Quang Anh	Nguyen	Luther College	Psychology	1pm	
Title: The effects of gender and marriage on Trauma, Meaning in Life, and Forgiveness in Haiti, Puerto and Nigeria					
Sam Devon	Fonder Silver	Saint Norbert College	Psychology	1:20pm	
Title: Effects of Three Types of Attentional Focus on Standing Long Jump Performance					
Kelli	Richardson	Viterbo University	Nutrition	1:40pm	
Title: Nutrition in Midwest State Department of Corrections Prisons					

Nursing Center Room 202		Facilitator: Jennifer Sadowski		Judges: Christopher Mayne and Ted Wilson	
First	Last	Institution	Discipline	Start	
Madalyn	Bollig	Saint Mary's University of MN	Environmental Biology	12noon	Title: The Relationship Between Needlegrass (Stipa spartea) and Spotted Knapweed (Centaurea biebersteinii) in the Crex Meadows State Wildlife Area
Aleah	Anderson	UW-Eau Claire	Environmental Public Health	12:20pm	
Connor	Barnes				Title: Particulate Air Quality Around Wisconsin Frac Sand Mining
Josephine	Killoren				
Alissa	Griswold	Viterbo University	Urban Agriculture	12:40pm	Title: Herb and Blossom Shelf Life with Hillview Urban Agriculture Internship
Ben	Borash	Saint Mary's University of MN	Environmental Biology	1pm	
Thomas	MacGregor	Viterbo University	Biology	1:20pm	Title: Examination of Hole Size and Shape in Mason Bee Nesting Preferences
Jacob	Kramer	Saint Mary's University of MN	Biology	1:40pm	
Title:		A Report on Nocturnal Avian Mortality at Communication Towers and Buildings In and Near Winona, MN Due to High Cloud Cover			
Fine Arts Center 204		Facilitator: Michael Wodzak		Judges: Scott Gabriel and R. Charles Lawrence	
First	Last	Institution	Discipline	Start	
Kean	Fallon	UW-La Crosse	Mathematics	12noon	Title: Rainbow sums
Zack	Bracken	Saint Mary's University of MN	Biology	12:20pm	
Natalie	Ruegsegger				Title: The effects of utero Atrazine exposure on Mus musculus GST expression mRNA in relationship to circadian rhythm
Melissa	Edgar	Viterbo University	Medical	12:40pm	
Title:		The Safety and Efficacy of Intravenous Ferumoxytol versus Intravenous Iron Dextran in Pediatric Patients with Iron Deficiency			
Lucas	Ritter	Viterbo University	Mathematics	1pm	Title: How Romance Between Mice Leads to Pi

Poster Presentations by Room/#

Key: NRC = Nursing Center Room 195, MTL = Fine Arts Center Main Theater Lobby

Poster Session Coordinators: NRC 195 = Kim Olson-Kopp, FAC MTL = Matthew Bersagel Braley

Odd #s = 2p-3p, Even #s = 3p-4p

Poster #	First Name	Last Name	Institution	Discipline
NRC - 1	Alexa	Baker	Viterbo University	Social Work
Title: Evaluation of the Implementation of Trauma Informed Approaches in K-12 Schools				
NRC - 2	Quang Anh	Nguyen	Luther College	Psychology
Title: The effects of gender and marriage on Trauma, Meaning in Life, and Forgiveness in Haiti, Puerto and Nigeria				
NRC - 3	Zaria	Beyer	Viterbo University	Ethics
Title: The Ethics of Vaccinations				
NRC - 4	John	Lawlis	UW-La Crosse	Political Science
Title: Voting Against Party Interests: An Analysis of the Wisconsin State Legislature				
NRC - 5	Harley	Large	Viterbo University	Social Work
Title: Children and Homelessness				
NRC - 6	Alexis	Salem	Winona State University	Psychology
Title: Effects of Dextromethorphan on Sign and Goal Tracking				
NRC - 7	Sarah	Eachus	Luther College	Psychology
Title: Forgiveness as a Buffer to Psychological Distress and Negative Life Events in Guyana				
NRC - 8	Abigail Thomas Danielle Elizabeth	Benvenuto Carlson Langworthy Schmitt	Winona State University	Psychology
Title: Perceived Stress and Physical Health in La Crosse County Residents: The Intervening Effects of Education, Income, and Race				
NRC - 9	Abigail Ember	Pickett Griebeling	Luther College	Psychology
Title: Implementing a Counseling Minor at Luther College				
NRC - 10	Claire	Trussoni	Viterbo University	English Literature
Title: Playing in the Woods: Harvest Moon and Pastoral Escapism				
NRC - 11	Ingrid	Christopherson	Luther College	Psychology
Title: Trauma, Meaning of Life, and Forgiveness in Haiti, Nigeria, and Puerto Rico				

Poster #	First Name	Last Name	Institution	Discipline
NRC - 12	Carina Abbie	Hansen Madson	Luther College	Psychology
Title: Trends and Potential Causes of Obesity Among Preschoolers				
NRC - 13	Kaitlyn	Kirtz	Viterbo University	Social Work
Title: Perceptions of the Effectiveness of Mental Health Services in Schools				
NRC - 14	Sarah	Trandahl	Viterbo University	English Writing
Title: An Ekphrastic Study of Edgar Degas' Art				
MTL - 15	Holly	Nelson	Viterbo University	Nutrition and Dietetics
Title: 12-Week Vegetarian Diet Intervention Effect on Inflammatory Status and Cardio-Metabolic Parameters				
MTL - 16	Laura	Zinnel	UW-La Crosse	Mathematics
Title: Anti-Schur numbers for $x_1+x_2=x_3$ in $[n] \times [m]$				
MTL - 17	Cullen	Schull	UW-La Crosse	Organic Chemistry
Title: Asymmetric Synthesis of Di- and Mono- Substituted Curcuminoids				
MTL - 18	Daniel	Johnson-Schunk	UW-La Crosse	Geography
Title: Biodiversity Characterization in a Native Prairie in Western Wisconsin using an Unmanned Aerial System (UAS) Imagery				
MTL - 19	Chelsey	Sloan	UW-La Crosse	Geography
Title: Collection & Initial Description of Sediment Core from Mud Lake in Jefferson County, WI				
MTL - 20	Carl	Fossum	UW-Eau Claire	Biochemistry
Title: Computation of Binding Free Energy of Tryptophan-Cosolute Complexes				
MTL - 21	Ruth	Woehlke	UW-Eau Claire	Chemistry and Physics
Title: Construction and Evaluation of Polycaprolactone Fibers for Drug Release Implants				
MTL - 22	Alexander Murphi	Narkiewicz-Jodko Williams	UW-Eau Claire	Biochemistry
Title: Crowding Effects on Prolyl-tRNA Synthetase Visualized via Atomic Force Microscopy				
MTL - 23	Vanessa	Czeszynski	UW-La Crosse	Aquatic Biology
Title: Dissolved Organic Carbon: A Link Between Vital Processes in Streams and Lakes				
MTL - 24	Jessica Aubrey	Liebau Liew	UW-Eau Claire	Biochemistry
Title: Investigation of Interactions Between Protein and Poly(ethyleneglycol) using Enzyme Kinetics and Fluorescence Studies				
MTL - 25	Breanna	Murray	Winona State University	Organic Chemistry
Title: F-19 NMR Determination of Relative Rate Constants for Hydrogen Abstraction by p-fluorophenyl Radicals from Fatty Acid Methyl Esters				

Poster #	First Name	Last Name	Institution	Discipline
MTL - 26	Michaela	Jurewicz	Northland College	Chemistry
Title: Fluorescence in New World Flying Squirrels				
MTL - 27	Alleah	Baltzer	UW-Eau Claire	Mathematics
	Logan	Pauly		
Title: Analyzing Changes in Stock Pricing Data Using Bimodal Data				
MTL - 28	Jennet	Hojanazarova	Waldorf University	Biology
Title: Morphological assays to test the functional interdependence of ALG-2 and IP3R3 in calcium regulation of ER to Golgi transport				
MTL - 29	Megan	Hickinbotham	UW-La Crosse	Geography and Earth Science
Title: Organic and Carbonate Content from a Lake Sediment Core, South Central Wisconsin				
MTL - 30	Casey	Sroda	UW-Eau Claire	Physics
Title: Organic Light-Emitting Diode Fabrication and Exploration of the Organic Magnetoresistance Effect				
MTL - 31	Aleah	Anderson	UW-Eau Claire	Environmental Public Health
	Connor	Barnes		
	Josephine	Killoren		
Title: Particulate Air Quality Around Wisconsin Frac Sand Mining				
MTL - 32	Hannah	Krause	Viterbo University	Biology
Title: Role of Biochemical Components of the Tumor Microenvironment on Cancer Progression				
MTL - 33	Abby	Bishop	UW-La Crosse	Exercise and Sport Science
	Cassidy	McCann		
Title: The Effects of the Ketogenic Diet on Body Composition and Performance in Resistance Training Female Athletes				
MTL - 34	MacKenzie	Christy	UW-La Crosse	Nutrition
Title: The Effects of a Ketogenic Supplement on Body Composition and Performance in Resistance Training Women				
MTL - 35	Benjamin	Johnson	UW-Eau Claire	Biochemistry
Title: The Effects of Monomer and Polymer Cosolutes on the Intrinsic Fluorescence of Tryptophan and Escherichia coli prolyl-tRNA synthetase				
MTL - 36	Theodore	Braman	Viterbo University	Biology
Title: The Effect of Ethanol on the Microbiome and Anxious Behavior in a Rat Model				
MTL - 37	Nico	Lang	UW-La Crosse	Synthetic Organic Chemistry
Title: Microwave-Assisted Efficient One-Pot Synthesis of Curcumin and Curcuminoids				
MTL - 38	Bryan	Sengbusch	Viterbo University	Biology
Title: ykkCD riboswitch mutation for fluorescent binding assays				

Poster #	First Name	Last Name	Institution	Discipline
MTL - 39	Elaine	Remus	Viterbo University	Biology
Title: Danaus plexippus Food Preferences in Correlation to Oviposition				
MTL - 40	Hailey	Bell	Viterbo University	Nursing
	Kyah	Flock		
	Derek	Myers		
	Elena	Witt		
	Reghan	Wohlrab		
Title: Social Determinants of Health in Disadvantaged Populations				



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Full Abstract Book Guide

81 students from 9 institutions across Wisconsin, Iowa, and Minnesota are presenting with us this year.

The Abstract Book is organized alphabetically by institution first, then alphabetically by presenter last name.

- 1. Luther College*
- 2. Northland College*
- 3. Saint Mary's University of MN*
- 4. Saint Norbert College*
- 5. UW-Eau Claire*
- 6. UW-La Crosse*
- 7. Viterbo University*
- 8. Waldorf University*
- 9. Winona State University*

Use Ctrl-F to easily search for names, topics, or keywords.

Thank you and we hope you enjoy today's celebration of academic achievement!



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UNDERGRADUATE
RESEARCH SYMPOSIUM

Trauma, Meaning of Life, and Forgiveness in Haiti, Nigeria, and Puerto Rico

Ingrid Christopherson

Institution: **Luther College**

Faculty Mentor: **Loren Toussaint**

Co-Authors: **Anila Bano**

Discipline: **Psychology**

Presentation Type: **Poster Presentation**

Presentation Location: **Nursing Center Room 195 – Poster # 11**

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

This research examines the impact of traumatic experiences on one's perception of the meaning of life and the ability to forgive oneself, others, and the situations that they have experienced. The study also looked at how the participants' level of forgiveness affected their response to traumatic events. A similar study that examined the impact of forgiveness on symptoms of PTSD indicated that forgiveness can be very difficult for those who have experienced trauma (Cerci & Colucci, 2018). This study was conducted with 455 Haitian, 139 Nigerian, and 98 Puerto Rican participants. We hypothesized that those who had experienced higher levels of trauma would be less likely to be able to forgive themselves, others, and feel forgiven by God. Moreover, those who would have presence or search for meaning in life would show less traumatic symptoms. We also used the data collected from these three different regions to determine if there were any significant differences among forgiveness abilities and view of life in trauma victims in these locations. Measures used included the Harvard Trauma Questionnaire, Presence of Meaning and Search for Meaning surveys to determine levels of trauma and perceived meaning in one's life. Research results discuss how one's trauma impacted their ability to forgive, as well as any differences observed in the data collected from the three regions. The analysis showed that forgiveness to self others and feeling forgiven by God are highly correlated with traumatic symptoms. Although there was not a significant correlation between the presence of meaning in the three categories of forgiveness, search for meaning seemed to be significantly correlated. Differences were clearly seen between the three regions.



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UNDERGRADUATE RESEARCH SYMPOSIUM

Forgiveness as a Buffer to Psychological Distress and Negative Life Events in Guyana

Sarah Eachus

Institution: **Luther College**
Faculty Mentor: **Loren Toussaint**

Discipline: **Psychology**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Nursing Center Room 195 - Poster # 7***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

In 2014, Guyana was noted to have the highest suicide rate in the world with 44.2 suicides per 100,000 people (70.8 per 100,000 for men and 22.1 per 100,000 for women), compared to the global average of 11.4 suicides per 100,000 people. Survivors experience large levels of psychological and social distress, trauma, shame, guilt, stigma, and a lack of meaning in life. These traumas are typically large in scale and affect large proportions of the community. Previous studies show that making sense out of trauma comes more easily to those who have experienced fewer traumatic events, compared to those who have experienced more. Understanding how the negative life events in Guyana have brought trauma and psychological distress to the community members, and how that brings about new challenges for forgiveness and meaning making, will allow us to recognize and implement tools made to change the course of life in Guyana. Surveys were distributed and administered to 418 subjects in Guyanese communities. Measures used in the present study include forgiveness (of self, by God, and proactive), negative life events, psychological distress, and life satisfaction. Descriptive statistics and bivariate Pearson correlations were completed to examine the data in this study. Results show statistically significant positive correlations between negative life events and psychological distress. Further, significant inverse correlations were found between distress and forgiveness, as well as negative life events and forgiveness. Living in Guyana presents a variety of different hardships including poverty, unemployment, lack of mental health resources, etc. This study helps examine how forgiveness can act as a buffer to distress and negative life events in this developing country. Further analysis will be shown in the presentation.



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Implementing a Counseling Minor at Luther College

Ember Griebeling & Abigail Pickett

Institution: **Luther College**
Faculty Mentor: **Dr. Breitenstein**

Discipline: **Psychology**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Nursing Center Room 195 - Poster # 9***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

This research examined the feasibility of implementing a counseling minor at a small liberal arts college, especially among students interested in visual performing arts. Approximately 200 prospective students and 100 students majoring in the visual performing arts were surveyed regarding their interest in such a minor. Results indicate viable interest levels to offer such a minor. A counseling minor would potentially offer these students additional pathways for personal and professional growth.



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UNDERGRADUATE RESEARCH SYMPOSIUM

Trends and Potential Causes of Obesity Among Preschoolers

Carina Hansen & Abbie Madson

Institution: **Luther College**
Faculty Mentor: **Loren Toussaint**

Discipline: **Psychology**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Nursing Center Room 195 - Poster # 12***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

The purpose of the current study is to assess the impact that the Food and Fitness Initiative has had on preschoolers enrolled in the Head Start program, and to understand the relationship of environmental factors and obesity in preschoolers. This study was done in collaboration with Head Start, Mayo Clinic, Luther College, and the Food and Fitness Initiative (FFI). Participants (N=1,205) were Head Start preschoolers between the years 2012-2019. Each participant completed the following assessments; self help, social-emotional, speech and language, briganee, height, weight, and body mass index (BMI). This data was recorded as part of the Head Start program protocol. This study aimed to evaluate the impact of FFI interventions on the outcomes of body mass index z –score and developmental, social-emotional, and self-help scores using de-identified retrospective data. Preliminary analyses revealed a decrease that approached statistical significance between year 1 and year 2 in BMI for the participants who remained in the study for two years. We are actively analyzing to identify other relationships as well. The comprehensive objective is to determine what environmental risk factors that can be identified and prevented to positively influence the well-being of young children.



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UNDERGRADUATE
RESEARCH SYMPOSIUM

The effects of gender and marriage on Trauma, Meaning in Life, and Forgiveness in Haiti, Puerto and Nigeria

Quang Anh Nguyen

Institution: **Luther College**

Discipline: **Psychology**

Faculty Mentor: **Loren Toussaint**

Co-Authors: **Anila Bano and Ingrid Christopherson**

Presentation Type: ***Oral and Poster Presentation***

Presentation Location:

Oral: Nursing Center 201 - 1pm, Poster: Nursing Center 195 - Poster #2

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

This research investigates the impact of traumatic experiences on one's perspective on the meaning of life and the ability to forgive oneself, others, and the situations that they have experienced. Furthermore, the research also examines the influence of gender and marital status onto the nature of forgiveness. This study consisted of 455 Haitian, 139 Nigerian, and 98 Puerto Rican participants. We hypothesized that women would be more likely to experience the trauma more intense compared to their male counterparts, and marriage would exert a positive effect on both genders in terms of level of forgiveness. Measures used included the Harvard Trauma Questionnaire, Presence of Meaning and Search for Meaning surveys to determine levels of trauma and perceived meaning in one's life. Research results elaborate the extent to which gender and marital status determine the traumatic effect as well as the ability to forgive. Analyses of gender showed that women experienced more traumatic symptom severity and felt more forgiven by God. Analyses of marital status showed that married individuals showed higher levels of forgiving others. These and other results will be presented and discussed.



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Fluorescence in New World Flying Squirrels

Michaela Jurewicz

Institution: **Northland College**

Discipline: **Chemistry**

Faculty Mentor: **Michaela Carlson, Sharon Anthony**

Co-Authors: **Adam Gunnelson, Allison Kohler, Sharon Anthony, Michaela Carlson**

Presentation Type: **Poster Presentation**

Presentation Location: **Fine Arts Center Main Theater Lobby - Poster # 26**

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Fluorescence in visible wavelengths under ultraviolet (UV) light has been found in a range of birds, reptiles, amphibians, and a few mammals. Recently, the fur of New World Flying Squirrels has been found to fluoresce with a green peak at 490 nm and a pink peak at 650 nm corresponding to the fluorescence of porphyrins.¹ The porphyrins were extracted and thin layer chromatography was performed. HPLC determined that there were a variety of porphyrins causing the pink fluorescence. These porphyrins include: Uroporphyrin-I, Coproporphyrin-I, and Protoporphyrin-III, which are precursors to the heme from hemoglobin. This project is on-going to determine the cause of these excess porphyrins.



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The Relationship Between Needlegrass (*Stipa spartea*) and Spotted Knapweed (*Centaurea biebersteinii*) in the Crex Meadows State Wildlife Area

Madalyn Bollig

Institution: **Saint Mary's University of MN**
Faculty Mentor: **Dr. Benjamin Pauli**

Discipline: **Environmental Biology**

Presentation Type: ***Oral Presentation***

Presentation Location: ***Nursing Center 202 - 12noon***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Invasive species are threatening the health of native species throughout the world. Invasive species can establish in non-native habitats and outcompete native species that exist in these habitats. Protected areas are not exempt from the threat of invasive species. The Crex Meadows State Wildlife Area in Grantsburg, WI is 30,000 acres of native prairie and waterfowl habitat that is dedicated to preserving and restoring waterfowl and barrens habitat. Invasive species that are present in this wildlife area are inhibiting this restoration. Needlegrass (*Stipa spartea*) and spotted knapweed (*Centaurea biebersteinii*) are two species that thrive in the sandy soils. Needlegrass is native to this area, while spotted knapweed is not. Both have been observed inhabiting the same areas of The Crex Meadows State Wildlife Area. The objective of this study was to document and analyze the locations of both species to discover if they prefer the same habitat types and to predict where they will each grow next. Locations of spotted knapweed and needlegrass in Crex were marked using a GPS. Maxent, a species distribution model, was then used to assess the environmental features associated with where each species occurred. Results show that the environmental factors that affect the location of the needlegrass most are road distance, major roads, surficial deposits and bedrock. On the other hand, the environmental factors that affect the location of the spotted knapweed are slope, road distance, major roads, and elevation. These results can help with management of both species on this property.



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UNDERGRADUATE RESEARCH SYMPOSIUM

Modeling Human-Snake Conflict for Timber Rattlesnakes in Winona County, Minnesota

Ben Borash

Institution: **Saint Mary's University of MN**
Faculty Mentor: **Dr. Benjamin Pauli**

Discipline: **Environmental Biology**

Presentation Type: ***Oral Presentation***

Presentation Location: ***Nursing Center 202 - 1pm***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Humans and animals have a tendency to create conflict with one another. These interactions can be harmful in many ways, causing economic damage, physical injury, and instilling fear into people in the community. While management measures cannot eliminate these impacts, they have the potential to minimize the damage done to both parties. The Timber Rattlesnake (*Crotalus horridus*) represents a species surrounded by much public fear. In decades past, this species was hunted for a bounty, dens were destroyed, and the population greatly diminished. Timber Rattlesnakes are now an endangered species in Minnesota, however, at least one viable population exists today in and around the city of Winona. While this is positive for the species itself, many people in the community worry about their close proximity to a venomous pit viper. This has led to a great deal of fear especially among families with young children. In response, the Minnesota Department of Natural Resources has implemented a responder program where volunteers remove and relocate snakes that are reported by citizens. With this in mind, this study sought to determine areas of high contact between humans and snakes while also gaining an understanding of the environmental predictors relevant to human-snake conflict. Point locations of snake contacts were gathered from forms filled out following every volunteer responder call. Several environmental variables were selected as being potentially predictive of locations of human-snake interaction. A model was created to increase the understanding of pertinent environmental factors in Timber Rattlesnake habitat selection and conflict with humans. The results of this analysis have the potential to guide management efforts by highlighting environmental factors favorable to Timber Rattlesnake occurrence and areas prone to human-snake conflict.



VITERBO UNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

The effects of utero Atrazine exposure on *Mus musculus* GST expression mRNA in relationship to circadian rhythm

Zack Bracken & Natalie Ruegsegger

Institution: **Saint Mary's University of MN**

Discipline: **Biology**

Faculty Mentor: **Debra Martin**

Presentation Type: ***Oral Presentation***

Presentation Location: ***Fine Arts Center 204 - 12:20pm***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Atrazine is a commonly used herbicide in the United States. This chemical has the ability to avoid degradation and is a common contaminant of water. When toxic chemicals, like atrazine, enter the body a metabolic detoxification to decrease the damaging affects induced by toxins occurs. One class of enzymes responsible for metabolizing toxins are the Glutathione-S-Transferases (GSTs). Studies have indicated that the expression of GST is controlled by circadian rhythm. The current study examined the effects of exposure to atrazine on gene expression of GST and its enzymatic activity in relationship to circadian rhythm. 12-24-hour hrs old CD1 mice pups exposed to atrazine in utero were analyzed. The pregnant mice were exposed to 0 ppb, 3 ppb, and 30 ppb in a light controlled environment. It was determined by analysis by RT-PCR that atrazine interfered with the circadian expression of the GST isoenzymes mu, alpha, and pi, and the circadian gene Per1 mRNA with both the 3 ppb and 30 ppb exposure causing flat-lining of the mRNA express.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

A Report on Nocturnal Avian Mortality at Communication Towers and Buildings In and Near Winona, MN Due to High Cloud Cover

Jacob Kramer

Institution: **Saint Mary's University of MN**
Faculty Mentor: **Dr. Raymond Faber**

Discipline: **Biology**

Presentation Type: ***Oral Presentation***

Presentation Location: ***Nursing Center 202 - 1:40pm***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

As neotropical passerines migrate from northern deciduous forests to southern latitudes, they face the threat of colliding with communication towers and tall, clear buildings as they fly close to the ground due to high nocturnal cloud cover or inclement weather. These nocturnal weather conditions cause a 100+ foot tall tower's attractive light sources and guy wires to become a threat for migrating birds by disorientating and attracting them. Buildings are dangerous based on their light output, which is capable of capturing birds without the presence of overcast cloud conditions. The impact of communication towers and threatening buildings on avian mortality in inclement weather has not been monitored on migrating neotropical passerines within the Winona, Minnesota area. It is unknown how detrimental these structures in Winona are to these migrating neotropical passerine populations. Three communication towers and three potentially threatening buildings in or near Winona were selected to have their perimeters searched three times a week during the 2019 autumn migration to monitor the correlation between hazardous nocturnal cloud cover and structure avian mortality in Winona. During the research period, seven specimens were found and identified at three of the six observed sites. The found specimens were a Nashville warbler (*Leiothlypis ruficapilla*), a northern waterthrush (*Parkesia noveboracensis*), two house sparrows (*Passer domesticus*), a pied-billed grebe (*Podilymbus podiceps*), an American robin (*Turdus migratorius*), and a golden-crowned kinglet (*Regulus satrapa*). Five of the specimens were migratory species and three of the specimens collided with a structure during a night of high cloud cover. Due to the low sample size, no definite correlations can be made between high cloud cover and avian mortality, but it appears that Winona is not a particularly dangerous location on the flight-path of nocturnal migrating passerines.



VITERBO UNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Effects of Three Types of Attentional Focus on Standing Long Jump Performance

Sam Fonder and Devon Silver

Institution: **Saint Norbert College**

Discipline: **Psychology**

Faculty Mentor: **Dr. Paul Ngo**

Presentation Type: ***Oral Presentation***

Presentation Location: ***Nursing Center 201 - 1:20pm***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Attention focusing cues have been shown to be beneficial in enhancing performance in multiple fields, and previous research has shown that externally focused cues are more effective than internally focused cues (Benz, A., Winkelman, N., Porter, J. & Nimphius, S. (2016), Keller, M., Lauber, B., Gottschalk, M., & Taube, W. (2015)). However, there has been very little research regarding the effects of kinesthetic cues on performance. We compared the effect of providing either internally based, externally based, or kinesthetically based cues on standing long jump performance. College students were asked to perform the standing long jump at maximum effort under three counterbalanced attentional focus conditions. These conditions included either an internal cue (pushing with legs and swinging with arms), an external cue (reach a distant target), or a kinesthetic cue (be explosive and think 'go'). We hypothesized that the external and kinesthetic cues would be more effective than the internally focused cues, as done in Herbert and Williams (2017). Results indicated that average jump distance was significantly longer in the external and kinesthetic conditions compared to the internal condition, $F(2,26)= 18.031$, ($p<.01$), reaffirming the importance of kinesthetic cues that has only recently been introduced in the scientific community (Herbert and Williams, 2017). This should prompt further research into the potential benefits of kinesthetic cues compared to more traditional cues.



VITERBO UNIVERSITY



7 RIVERS

UNDERGRADUATE RESEARCH SYMPOSIUM

Particulate Air Quality Around Wisconsin Frac Sand Mining

Aleah Anderson, Connor Barnes & Josephine Killoren

Institution: **UW-Eau Claire**

Discipline: **Environmental Public Health**

Faculty Mentor: **Crispin Pierce**

Co-Authors: **Erik Rodahl**

Presentation Type: ***Oral and Poster Presentation***

Presentation Location:

Oral: Nursing Center 202 - 12:20pm, Poster: Fine Arts Center Main Theater Lobby - #31

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

The act of mining and processing sand for hydraulic fracturing generates particulate matter (PM), as well as crystalline and amorphous silica through blasting, loading, and hauling; processing activities such as crushing; and the transportation of processed and waste sand. The purpose of our research is to quantify the risk of ambient exposure to airborne particulates around industrial silica sand operations. EPA-certified dichotomous samplers were calibrated before and after sampling, and pre and post filter weights recorded. Over a two-year period, we observed increases in average PM_{2.5} concentrations of 2.6 and 16.1 ug/m³ over concurrent DNR background levels near industrial sites in Bloomer and New Auburn, WI, respectively. Using published studies, we estimate this increase in PM_{2.5} exposure to cause a loss of life expectancy of one day per year of exposure in Bloomer and three days in New Auburn. Collaborating with the DNR, industry representatives, academic colleagues, and community organizations such as Save the Hills Foundation, future research will include the use of affordable PurpleAir monitors to quantify particulate exposure, using a corrective formula that we derived from the California South Coast Air Quality Monitoring District's field evaluation of the PurpleAir Monitors. Thus far in Wisconsin we have installed 19 PurpleAir monitors and are examining 17 additional monitors located in the Midwest in order to collect air quality data. Over the past year of monitoring, our team has observed consistent PM_{2.5} levels that are above the DNR PM_{2.5} levels as a background site. We strive to provide objective information about air quality in Wisconsin in hopes of empowering individuals, communities, and underrepresented minorities.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE RESEARCH SYMPOSIUM

Demographics and Activities of Tourists in Mozambique

Chase Anderson

Institution: **UW-Eau Claire**
Faculty Mentor: **Karen Mumford**

Discipline: **Environmental Studies**

Presentation Type: **Oral Presentation**

Presentation Location: **Nursing Center 101 - 1pm**

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

According to the United Nations World Tourism Organization, Mozambique's growing tourism sector may play a key role in alleviating poverty. Despite the potential opportunities afforded by tourism, little research has been conducted on tourists who visit Mozambique. In this study, survey data collected from tourists visiting Tofo, Mozambique were collected to assess the characteristics, activities and behaviors of those visiting the area. Interview surveys were conducted by volunteers from All Out Africa Marine Conservation Center in Tofo, Mozambique. Volunteers intercepted tourists at dive shops and other areas where tourists congregated. Both closed- and open-ended survey questions were disseminated to collect information on tourist demographics, purpose and duration of visit, activities while in Tofo, and spending. A total of 136 surveys were completed. Respondents originated from 25 countries, 59% were female, and 67% were between the ages of 25 and 44. Pearson's chi-squared test of independence was conducted to examine the relationship between respondent characteristics and behaviors. More males participated in scuba diving than females ($p=.046$); and more females engaged in cultural activities than males ($p=.031$). In addition, males tended to spend at higher levels than female tourists ($p=.016$). Tourists from European countries tended to engage in more active activities, such as snorkeling, while tourists from African countries tended to prefer more passive activities such as spending time at the beach ($p=.027$). European tourists spent more money on food ($p=.000$) and preferred eating out rather than cooking meals compared to African tourists ($p=.045$). Although the sample size is small, these findings reflect different interests and behaviors among tourists based on sex and country of origin. Further research is needed to better assess the different segments of the tourist community to ensure that the needs of all segments of the tourism community are met.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Analyzing Changes in Stock Pricing Data Using Bimodal Data

Alleah Baltzer & Logan Pauly

Institution: **UW-Eau Claire**
Faculty Mentor: **Mohammad Aziz**

Discipline: **Mathematics**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Fine Arts Center Main Theater Lobby - Poster # 27***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

The purpose of this study is to find distributions that best model the NASDAQ close data provided. We are also attempting to find factors that most influence the closing price of stocks in the stock market. A stock price is an indicator for a company's financial prosperity. The closing price of a stock is an important piece of information for investors, traders, financial institutions, regulators and other stakeholders. These individuals use closing price of a stock as a reference point for determining performance over a specific time such as a week, a month or a year. Investors and other stakeholders often base their decisions on closing price of stocks. Institutional investors monitor a stock's closing price to make decisions for their investment portfolios [5]. The ability to use statistical procedures that encompasses both symmetric data and asymmetric data has become essential in recent years. Due to the skewness nature, we focus on modeling NASDAQ with various skewed distributions. Our research was able to demonstrate that unemployment, GDP and interest rate are all influential factors in the closing price of stocks. **KEYWORDS** National Association of Securities Dealers Automated Quotations; Closing price, Skew-normal distribution; Skew-student distribution; Skewed distributions; K-S test; Akaike Information Criterion



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Computation of Binding Free Energy of Tryptophan-Cosolute Complexes

Carl Fossum

Institution: **UW-Eau Claire**
Faculty Mentor: **Dr. Sanchita Hati**

Discipline: **Biochemistry**

Presentation Type: **Poster Presentation**

Presentation Location: **Fine Arts Center Main Theater Lobby - Poster # 20**

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Fluorescence spectroscopy has become a pivotal tool in biochemical research due to its incredible sensitivity and accuracy. Intrinsic protein fluorescence, which originates mainly from the aromatic amino acid tryptophan, is extensively used to study the dynamics and conformational changes of proteins. More recently intrinsic tryptophan (Trp) fluorescence spectroscopy has been used to study the effects of molecular crowding on the structure, dynamics and function of proteins. Synthetic crowding agents such as ethylene glycol, 1-ethyl-2-pyrrolidone, sucrose, and dextrose and their respective polymers are commonly used to mimic the intracellular environment. However, the impact of these synthetic molecular crowders (cosolutes) on the fluorescence properties of free Trp has not been thoroughly examined. In the present study the binding free energies ($\Delta G_{bind}(aq)$) for free Trp bound synthetic molecular crowders were simulated using Gaussian G09 to theoretically assess the degree to which static quenching of Trp occurs. The results of the Trp-cosolute binding free energy calculations will be presented.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

The Effects of Monomer and Polymer Cosolutes on the Intrinsic Fluorescence of Tryptophan and Escherichia coli prolyl-tRNA synthetase

Benjamin Johnson

Institution: **UW-Eau Claire**

Discipline: **Biochemistry**

Faculty Mentor: **Dr. Sanchita Hati**

Co-Authors: **Spencer Golde**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Fine Arts Center Main Theater Lobby - Poster # 35***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Macromolecular crowding has become an extremely important field of research in recent years. While great strides have been made in understanding the structure, dynamics, and function of proteins, the majority of research has been performed in dilute, aqueous conditions. In order to understand how proteins function inside of cell, it is necessary to simulate the cellular interior with the presence of macromolecules, which could greatly affect proteins. A common method used to simulate the cellular interior is to use synthetic sugar polymers, which act as large, inert molecules of different shapes and sizes. The difference between synthetic polymers and their monomers relating to their effect on Ec ProRS's structure, dynamics, and function is of interest. A polymer cosolute could affect enzyme function mainly through excluded volume and hard interactions, while a monomer could employ soft, chemical interactions. To understand these differences, we are studying the effects that the polymers and their respective monomers have on the structure of Escherichia coliprolyl-tRNA synthetase (Ec ProRS). Ec ProRS functions as a catalyst for the attachment of proline onto transfer ribonucleic acid and is vital for protein synthesis. By using intrinsic tryptophan fluorescence spectroscopy, we have looked at how polymer and monomer cosolutes impact the structure and dynamics of Ec ProRS. Recently, the impact of these cosolutes on free Tryptophan has been studied, in order to understand the mechanism of how cosolutes could impact those residues in Ec ProRS.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Investigation of Interactions Between Protein and Poly(ethyleneglycol) using Enzyme Kinetics and Fluorescence Studies

Jessica Liebau & Aubrey Liew

Institution: **UW-Eau Claire**
Faculty Mentor: **Dr. Sanchita Hati**

Discipline: **Biochemistry**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Fine Arts Center Main Theater Lobby - Poster # 24***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Polyethylene glycol (PEG) is a molecule known for its biocompatibility; it is widely considered to be biologically inert., despite the exact molecular mechanisms of PEG in biological conditions not being fully understood. Because of this, its applications range from the pharmaceutical industry to biological research, including proteomics. Recent studies, however, have begun to show that PEG may cause a in change in conformation and function of proteins, and present . Furthermore, experimental and computational studies have demonstrated that the hard and soft interactions between protein and PEG are influenced by the molecular weight (size) of the PEG molecules. In this investigation, we are exploring the protein-PEG interactions using the enzyme prolyl-tRNA synthetase (ProRS), which catalyzes the reaction covalent attachment of proline to its cognate tRNA. In order to find the effects of PEG on ProRS's form conformation and function, as well as study the molecular mechanism for the protein-PEG interactions, we are performing enzyme kinetics and fluorescence spectroscopy. In this presentation, we will discuss the preliminary experimental dataresults.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Crowding Effects on Prolyl-tRNA Synthetase Visualized via Atomic Force Microscopy

Alexander Narkiewicz-Jodko & Murphi Williams

Institution: **UW-Eau Claire**
Faculty Mentor: **Dr. Sanchita Hati**

Discipline: **Biochemistry**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Fine Arts Center Main Theater Lobby - Poster # 22***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Enzymatic studies are typically conducted in simple buffered solutions, ignoring realistically crowded cellular conditions that the enzyme would naturally perform in. Previous computational and experimental studies with *Escherichia coli* prolyl-tRNA synthetase (Ec ProRS) have suggested that protein structure became more compact and the catalytic efficiency was decreased in the presence of synthetic crowding agents. To examine the impact of crowding agents on protein conformation experimentally, Atomic Force Microscopy (AFM) was employed. AFM allows the direct visualization of crowding effects on protein conformations at the molecular level. This study specifically aims to explore how crowding agents of various sizes and chemical nature affect protein compactness. The AFM results of bovine serum albumin (BSA), which was used to standardize experimental procedures before characterization of Ec ProRS, will be presented.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Organic Light-Emitting Diode Fabrication and Exploration of the Organic Magnetoresistance Effect

Casey Sroda

Institution: **UW-Eau Claire**
Faculty Mentor: **Dr. James Rybicki**

Discipline: **Physics**

Presentation Type: **Poster Presentation**

Presentation Location: **Fine Arts Center Main Theater Lobby - Poster # 30**

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

This project is a continuation of previous work on fabrication of organic light emitting diodes (OLEDs) with the intent on refining the process and improving efficiency and longevity of the devices for future experimentation. OLEDs are semiconductor devices that have become the recent focus in the commercial electronics industry for their ideal properties, such as low-power consumption, flexibility, and higher quality, self-produced illumination. In the past, OLEDs have been fabricated at the University of Iowa; however, transitioning to on-site fabrication is preferred for logistical and experimental reasons. The fabrication process utilizes thermal evaporation and deposition of most of the included materials as well as several other preparation and finalizing processes. Once the fabrication process yields satisfactory results, some unique fundamental physics questions can be further investigated. Two big questions are the role an electrons' spin plays in the operation of organic electronics and how devices are affected in externally-applied magnetic fields. This includes the organic magnetoresistance effect (OMAR), the tendency for a material to change its electrical resistance in a magnetic field, and magnetic electroluminescence (MEL), a field's effect on light output. The goal is to explore OMAR and MEL in detail upon the finalization of a fabrication process for OLEDs at UWEC facilities.



VITERBO UNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Construction and Evaluation of Polycaprolactone Fibers for Drug Release Implants

Ruth Woehlke

Institution: **UW-Eau Claire**

Discipline: **Chemistry and Physics**

Faculty Mentor: **Dr. Jeffery L. Coffey**

Co-Authors: **William L. Burnett, Martin Segeja, Dr. Tristain Tayag**

Presentation Type: **Poster Presentation**

Presentation Location: **Fine Arts Center Main Theater Lobby - Poster # 21**

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

In terms of therapeutic options, there is a widespread need for multifunctional, scaffolding materials capable of drug delivery and ultimately tissue repair. In order to meet this need, multistage synergistic drug delivery systems are under active, extensive investigation using porous and solid ϵ -polycaprolactone (PCL) fibers produced using an electrospinning process. Capable of being loaded with doped silicon particles containing therapeutic drugs for long term, in vivo drug release, the future implications of this technology are extensive.

Drug release rates from PCL implants are dependent on the physical mechanisms of the polymer fiber system as well as the properties of the drug enclosed. In order to determine the escape rate of the drug from the polymer, the extent of erosion of the fibers, and relative strength of the material, porous and solid PCL fibers were constructed and tested over the span of six weeks. The fibers were stored in different conditions: (1) low humidity (desiccator); (2) deionized water; and (3) phosphate buffered saline to determine the optimal, long-term storage conditions of the fibers as well as to evaluate fiber degradation when placed in vivo. Gravimetric analysis was performed on all fiber samples to determine the percent mass loss and Young's Modulus testing was completed to evaluate the erosion properties of the fibers relative to the strength of the material as well as if future implants could be placed near load-bearing portions of the body.



VITERBO UNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Religion and Its Linkage to the Wellbeing of the Chinese Elderly

Chloe Zielke

Institution: **UW-Eau Claire**
Faculty Mentor: **Jianjun Ji**

Discipline: **Sociology**

Presentation Type: ***Oral Presentation***

Presentation Location: ***Nursing Center 201 - 12:40pm***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Religion is a rare topic in contemporary Chinese society and so it is also true in the domain of the scientific research on religion and its associations with other social factors. As a new endeavor, this project attempts to explore the relationship between the wellbeing of the Chinese elderly and their linkages to the role of religions in contemporary Chinese society. By utilizing most recent China's national survey on the elderly population in 2006, this project asks the question whether religions in China play a role in its relationships with the overall wellbeing of the Chinese elderly population. The project tests the hypothesis that the wellbeing of the Chinese elderly in terms of Life Satisfaction / Happiness, Education, Marital Status, Fertility, Filial Piety, and Health Status is associated with religion, by holding constant the effect of education, gender, age, region, rural/urban, and economic status. To test this hypothesis, statistical methods of Chi-square, descriptive statistics, percentage frequencies, cross-tabulations, as well as the measures of aptitudes such as Cramer's V, Contingency C, Tau-b, and Tau-c, are used. Though the results show partial support to the underlying hypothesis, it intrigues further curiosity for continuous endeavors. Discussions and implications are unfolded.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

The Effects of the Ketogenic Diet on Body Composition and Performance in Resistance Training Female Athletes

Abby Bishop & Cassidy McCann

Institution: **UW-La Crosse**
Faculty Mentor: **Karen Skemp**

Discipline: **Exercise and Sport Science**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Fine Arts Center Main Theater Lobby - Poster # 33***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

The ketogenic diet is a high fat, low carbohydrate diet. Recent research has shown positive benefits of this diet for endurance training male athletes. Additionally, recent studies have demonstrated that this diet can improve body composition. However, questions remain in regard to whether or not this diet will influence muscular strength and endurance, more specifically among the female resistance training population. The purpose of this study was to examine if the ketogenic diet would produce a positive effect on body composition (fat mass, fat free mass, and overall weight loss) and performance measures through the use of 1-RM testing (back squat, bench press, flexed arm hang, and vertical jump). A sample of 10 women were randomly assigned to the ketogenic diet (N=3) or the healthy diet (N=7), based on the Harvard Healthy Eating Plate. Both groups participated in resistance training at least 3 times a week for the duration of the 5-week study. Participants had ketone levels measured tri-weekly through urinalysis testing using the McKesson 120 Urine Analyzer and McKesson Urinalysis Reagent Strips to determine if ketosis was achieved and maintained, ideally >40mg/dL. Body composition measures were obtained using the Bod Pod. All measures were acquired at week 0 and week 5 of the study to compare results between the two diets. Results indicated no statistically significant difference at $\alpha=.05$ [p-values between .167-.833] within body composition and performance changes between the two diets. Due to the small sample size in the ketogenic diet, it is difficult to determine conclusive evidence of differences present. However, it is relevant to recognize that all 3 participants of the ketogenic diet lost fat and increased fat free mass. Further studies using similar parameters and more participants are recommended in order to fully determine the effects of the ketogenic diet on body composition and performance.





7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

The Effects of a Ketogenic Supplement on Body Composition and Performance in Resistance Training Women

MacKenzie Christy

Institution: **UW-La Crosse**
Faculty Mentor: **Karen Skemp**

Discipline: **nutrition**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Fine Arts Center Main Theater Lobby - Poster # 34***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Since ketone supplements are relatively new, there are few studies, especially those in women who participate in resistance training, examining what effects they can have on body composition and performance. The purpose of this study was to examine if a supplement containing exogenous ketones would produce a positive impact on body composition and various performance measures. A sample of 13 women were randomly assigned to either the supplement group (n=5) who consumed an exogenous ketone supplement (Ketōnd) twice a day, or the control group (healthy diet group) who were told to use Harvard Healthy Eating Plate as a reference to healthy eating. Both groups participated in resistance training three times a week for 6 weeks. Those in the supplement group had their blood ketone level monitored by NovaMax Plus Blood Monitoring Systems fitted with NovaMax Plus Ketone Strips, tri-weekly 45 minutes after consumption of the supplement. Body composition measures were taken via BodPod. Performance was measured using a 1-RM back squat and bench press, flexed arm hang for time, and vertical jump. All measurements were taken at week 0 and week 6 and compared to see the differences between the two groups. Both the supplement group and control group saw positive increases in their performance as well as favorable changes in their body composition. Results indicate differences in body composition and the performance measures were not statistically significant at $\alpha=0.05$ [p-value ranges 0.338-0.942] between the two groups' body composition and performance. Therefore, we are unable to conclude consuming a ketone supplement is more beneficial to body composition and performance than is a healthy diet in combination with resistance training. Further studies would be needed to evaluate the impact of exogenous ketones on body composition and performance in resistance training women.



VITERBO UNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Dissolved Organic Carbon: A Link Between Vital Processes in Streams and Lakes

Vanessa Czeszynski

Institution: **UW-La Crosse**

Discipline: **Aquatic Biology**

Faculty Mentor: **Dr. Eric Strauss**

Co-Authors: **Eric Strauss**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Fine Arts Center Main Theater Lobby - Poster # 23***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Dissolved organic carbon (DOC) is a key component of the carbon cycle in aquatic systems, and understanding the dynamics of DOC can be essential for understanding aquatic ecosystem metabolism and functioning. Colored dissolved organic material (CDOM) can be used to explain the optical properties of organic carbon, and is known for having a strong relationship with total DOC in many systems. The objectives of this study were to determine the range in DOC and CDOM quantity in 54 streams and lakes across the northern highlands region of Wisconsin and the upper peninsula of Michigan, and to assess any differences in trends between the two system types. Sampling a variety of stained and unstained systems, we predicted a wide range in DOC and CDOM, expecting a positive relationship between CDOM and DOC. We expected that this relationship would be stronger in lakes, since closed systems allow for longer retention of nutrients and greater decomposition of low-molecular weight and less colored DOC. Water samples were analyzed for concentrations of total DOC and CDOM and several spectrophotometric properties such as color at 456nm and specific ultraviolet absorption at 254nm. Overall, DOC ranged from 3.01-25.01 mg/L and CDOM ranged from 4.25-32.29 mg/L. In both streams and lakes, the relationship between DOC and CDOM was highly linear with R² values of 0.9083 and 0.9349, respectively. Trends between DOC and CDOM were as expected, supporting our hypothesis; however, there was not a significant difference of DOC concentration between the two systems. Various samples possessed high values for color relative to DOC and CDOM quantity, which can be caused by the presence of other dissolved materials present in the system. Further analyses on iron concentration will be done, as its presence in the system could explain this trend.



VITERBO UNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Rainbow sums

Kean Fallon

Institution: **UW-La Crosse**

Discipline: **Mathematics**

Faculty Mentor: **Nathan Warnberg**

Co-Authors: **Colin Giles, Hunter Rehm, Simon Wagner**

Presentation Type: **Oral Presentation**

Presentation Location: **Fine Arts Center 204 - 12noon**

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Schur numbers, denoted $S(x)$, are named after the Russian mathematician Issai Schur. Since their discovery in 1916, only five of them have been computed. Due to the intractability of computing more Schur numbers, we decided to create and investigate anti-Schur numbers, denoted $aS(x)$.

To understand $aS(x)$ one must first consider the counting numbers $[1, 2, \dots, x]$. If four of these counting numbers satisfy the equation $a+b+c = d$ then we say they form a sum. For example, $\{1, 3, 5, 9\}$ is a sum since $1 + 3 + 5 = 9$.

Now we assign a color to each counting number in our set. Here is an example using four colors and the set of counting numbers $[1, 2, \dots, 14]$:

1 2 3 4 5 6 7 8 9 10 11 12 13 14

r g g b b y r g y r y b b r

r = red, g = green, b = blue, y = yellow

One of the sums in this set is $\{1, 3, 5, 9\}$. We call this a rainbow sum due to the fact that each number is colored distinctly. We then define $aS(x)$ to be the smallest number of colors needed to color the set $[1, 2, \dots, x]$ such that a rainbow sum is guaranteed to exist in the set. Using case analysis, logic, and number theory, we concluded the following:

$aS([n], x_1 + x_2 + x_3 = x_4) = 12(n + 7)$. We have now set our sights on finding the anti-Schur number for a much larger family of equations, $x_1 + x_2 + x_3 = b$.



VITERBO UNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Organic and Carbonate Content from a Lake Sediment Core, South Central Wisconsin

Megan Hickinbotham

Institution: **UW-La Crosse**

Discipline: **Geography and Earth Science**

Faculty Mentor: **Joan Bunbury, Colin Belby**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Fine Arts Center Main Theater Lobby - Poster # 29***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Material contained within a lake sediment core can provide information about a region's past environmental conditions and how they have fluctuated over time. A 9.5 meter sediment core was collected from Mud Lake, located in Jefferson County, Wisconsin, in June 2019 for the purpose of creating a full post-glacial climate record. The first step in studies of this nature is to analyze the sedimentary properties of the core. Therefore, the goal of this project is to determine changes in the organic and carbonate content of the core using sediment loss-on-ignition (LOI). Preliminary results of the top 4.5 m of the core indicate that organic content ranges from 8 to 33% and carbonate content between 31 and 42%. A chronology using radiocarbon dated materials will help to determine the timing of these variations and allow the comparison of these LOI records with other paleo-environmental studies from the region.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Biodiversity Characterization in a Native Prairie in Western Wisconsin using an Unmanned Aerial System (UAS) Imagery

Daniel Johnson-Schunk

Institution: **UW-La Crosse**
Faculty Mentor: **Niti Mishra**

Discipline: **Geography**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Fine Arts Center Main Theater Lobby - Poster # 18***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Native prairies and grasslands occupy the largest vegetation province in North America. Yet, since European settlement, the decline in the area of native prairie has steadily increased. A rise in the need to protect this habitat has looked to the developing technologies of UAS to test its potential in collecting data within these habitats. This study's objective is to combine data collected in the field and relate it to UAS data provides with a bird's eye view. This bridges the gap between the field and the lab and offers an opportunity to gage the suitability of UAS in identifying species with unprecedented methods. First, species were identified on the ground to create a database of existing vegetation types in the Holland Sand Prairie near Holmen, WI. Oblique images were taken on the ground which provided accurate geotagged locations for those species. The UAS data was collected using a quadcopter UAS (DJI Mavic 2 Pro) by strategically selecting areas of homogeneous species growth and images were collected at a height of 25 to 30 meters. The data was taken from the drone and the pictures geotagged location was converted to a central point using the spatial analyst tool "Geotagged photos to point" in ArcGIS and filed within a database. Visual analysis of UAS photos in comparison with field derived information is showing the potential of UAS imagery for improved biodiversity characterization over comparatively large areas within a shorter time frame compared to traditional field based methods.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

The Microwave-Assisted Synthesis of Curcumin and Curcumin Analogs

Nico Lang

Institution: **UW-La Crosse**
Faculty Mentor: **Dr. Valeria Stepanova**

Discipline: **Synthetic Organic Chemistry**

Presentation Type: **Poster Presentation**

Presentation Location: **Fine Arts Center Main Theater Lobby - Poster # 37**

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Curcumin has demonstrated many medicinal properties such as anti-proliferative, anti-inflammatory, antimicrobial, and much more. Isolation of curcumin from plants results in impure curcumin. Biological studies consisting of unclear purity curcumin samples can lead to discrepancies in observed outcomes. Therefore, a reliable, efficient, and environmentally friendly pathway towards curcumin is necessary. The previously reported syntheses of curcumin and curcumin analogs (curcuminoids) are limited by the use of toxic reagents and harsh conditions such as long reaction times and temperatures. The purpose of this project was to design a one-pot microwave-assisted synthetic protocol of curcumin and curcuminoids to maximize reaction efficiency. Our results demonstrate successful optimization of the microwave-assisted synthesis of curcumin and curcuminoids, providing routes to the development of a fast, efficient, and environmentally friendly synthesis of curcumin and its analogs.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Voting Against Party Interests: An Analysis of the Wisconsin State Legislature

John Lawlis

Institution: **UW-La Crosse**

Discipline: **Political Science**

Faculty Mentor: **Dr. Anthony Chergosky**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Nursing Center Room 195 - Poster # 4***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

This research is an analysis of the voting habits of legislators within the Wisconsin State Legislature and highlights the independent variables that might cause a legislator to vote against their party's majority vote. In this research, that the act of voting against party interests is not synonymous with cross-party voting.

Rather, it is when a legislator casts their vote in a different direction than the majority of their party; whether it be with their party's opposition or against the majority vote of both parties entirely. During this research, I spoke to fifteen separate legislators at the Wisconsin State Capitol, interviewing each regarding the influence that their personal opinions, party values, and constituency has on their voting decisions. These interviews were completely confidential, which allowed legislators to speak quite candidly. Conversations ranged from under ten minutes long to over an hour. Legislators were asked to complete a Likert scale regarding areas of importance to their constituencies, with ten key policy issues listed on a range from 1 – 9; 1 being "Unimportant", and 9 being "Very Important". This mix of qualitative and quantitative data provides a comprehensive look at which independent variables are important to the constituencies of legislators within the Wisconsin State Legislature. The results of this research indicate that legislators may vote against party interests if there are appropriate reasons to do so, such as constituency-specific variables. Additionally, personal opinions may cause a legislator to vote against party interests. However, voting against party interests is not without its detriments, and can lead to repercussions against the legislator who does not fall into party lines. Legislators also identified the importance that party leaders play in facilitating policy-based directives, and indicated that the statistical makeup of an assembly can play a role in encouraging or dissuading a party-line vote.



VITERBO UNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Asymmetric Synthesis of Di- and Mono- Substituted Curcuminoids

Cullen Schull

Institution: **UW-La Crosse**

Discipline: **Organic Chemistry**

Faculty Mentor: **Valeria Stepanova, Joesph West**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Fine Arts Center Main Theater Lobby - Poster # 17***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

The research focus is on the asymmetric curcuminoid formation via a microwave assisted synthetic protocol using 2-acetylcyclohexanone (ache) and three different aldehydes: 4-anisaldehyde, 2 anisaldehyde and 4-chlorobenzaldehyde. Naturally occurring curcumin has shown significant medicinal and pharmacological potential. The biological relevance has led to research among its' synthetic analogues, termed curcuminoids. In this research we explore experimental methods to efficiently synthesize asymmetric di- and mono-substituted curcuminoids by modifying the core diketone link and/or utilizing two different aldehydes. The aldehyde: ketone ratio was varied from 2:1 to 1:1 to obtain products of mono and di additions. Computational analysis, using Avogadro and GAMESS, is used to analyze potential trends in product formation based on changes in the electronic distribution between the starting material, the proposed intermediate, and final product(s). The specific trends in Mulliken charge and electron potential are applied to support a proposed hypothesis on the relative reactivity of incorporated compounds and the structure of isolated final product. All new compounds were analyzed for their identity and purity using ¹H nuclear magnetic resonance (NMR) spectroscopy.



VITERBO UNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Mixed in the Media: Media Representation and Self-Identity of Multiracial Individuals

Migdalia Simpson

Institution: **UW-La Crosse**

Discipline: **Psychology**

Faculty Mentor: **Suthakaran Veerasamy**

Presentation Type: ***Oral Presentation***

Presentation Location: ***Nursing Center 201 - 12:20pm***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

There is a large amount of research that shows the impact that media representation of a group can have on the self-identity development of individuals within that group. While multiracial individuals make up the fastest growing racial group in the United States, research exploring the self-identity development of multiracial individuals is severely lacking. Therefore, I am currently conducting a research project to examine the link between media representation of multiracial individuals and their self-identity development. I have completed ten in depth interviews with participants between the ages of 18 and 30 about what it means to be multiracial today as well as how they feel the media represents their racial group. This qualitative study has already yielded some preliminary common themes between the interviews including feelings of needing to "choose a side" and having to be an educator on their identity for their peers. Other preliminary findings include an absence of diversity within the media's representation of multiracial individuals specifically the overrepresentation of black and white multiracial individuals but an underrepresentation of other racial combinations. More commonalities are expected to be discovered as we enter deeper into the analysis portion of the project. I plan to submit the results from this study for publication in the Journal of Undergraduate Research published through the University of Wisconsin – La Crosse in an effort to add to the self-identity development literature in the field of psychology.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Collection & Initial Description of Sediment Core from Mud Lake in Jefferson County, WI

Chelsey Sloan

Institution: **UW-La Crosse**

Discipline: **Geography**

Faculty Mentor: **Dr. Joan Bunbury & Dr. Colin Belby**

Co-Authors: **Megan Hickinbotham**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Fine Arts Center Main Theater Lobby - Poster # 19***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Lake sediment cores are one of several proxies used by climate scientists to help reconstruct climate history for a specific region. Reconstructing past climates can aid in identifying climatic patterns for a region that humans can use to prepare for and adapt to these future changes in climate. The long-term goal of this project is to develop a paleoclimate record that will provide insight into patterns of floods and droughts across the Upper Midwest since the last glacial period. In June 2019, a 9.5 m sediment core was collected from Mud Lake using Bolivia and Livingston piston corers. An Initial Core Description (ICD) was completed at the LacCore facility at the University of Minnesota – Twin Cities where various analyses were done on the sediment core including acoustic wave velocity, color spectrophotometry, density, electrical resistivity, and magnetic susceptibility. Details about the core collection process, will be presented, as will the ICD data, and preliminary findings.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Anti-Schur numbers for $x_1+x_2=x_3$ in $[n] \times [m]$

Laura Zinnel

Institution: **UW-La Crosse**

Discipline: **Mathematics**

Faculty Mentor: **Dr. Nathan Warnberg**

Co-Authors: **Joe Miller, Nathan Warnberg**

Presentation Type: **Poster Presentation**

Presentation Location: **Fine Arts Center Main Theater Lobby - Poster # 16**

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Consider the equation $x + y = z$ and the set of integers $[n] = (1, 2, 3, \dots, n)$. A solution to the equation is a set of three integers that satisfy the equation. For example, $(2, 5, 7)$ is a solution in $[8]$ but $(3, 8, 11)$ is not a solution in $[10]$ since 11 is not in $[10]$. Now we are going to color each integer in $[10]$ and let $r = \text{red}$, $b = \text{blue}$, $g = \text{green}$ and $y = \text{yellow}$.

1 2 3 4 5 6 7 8 9 10

r b r b g g y r y b

Once a set of integers has been colored we can describe a rainbow solution. A rainbow solution is a solution where each element in the solution is a different color. Thus, $(3, 4, 7)$ is a rainbow solution and $(1, 3, 4)$ is not. The problem we will be discussing is how to use as many colors as possible while avoiding rainbow solutions. In particular, we will be looking at coloring and adding pairs of integers in $[m] \times [n]$. For example, $[(2; 3); (1; 5); (3; 8)]$ is a solution to $x + y = z$ in $[4] \times [8]$ but is not a solution in $[4] \times [5]$ since $(3; 8)$ is not in $[4] \times [5]$.



VITERBO UNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Evaluation of the Implementation of Trauma Informed Approaches in K-12 Schools

Alexa Baker

Institution: **Viterbo University**

Discipline: **Social Work**

Faculty Mentor: **Janet Holter**

Presentation Type: **Poster Presentation**

Presentation Location: **Nursing Center Room 195 - Poster # 1**

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

The purpose of this study was to evaluate the implementation of trauma-informed approaches in K-12 schools. A qualitative study was conducted by interviewing three school social workers and three K-12 teachers. The results indicated that more trauma-informed trainings are needed for educators to adequately support students who have experienced trauma.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE RESEARCH SYMPOSIUM

Social Determinants of Health in Disadvantaged Populations

Hailey Bell, Kyah Flock, Derek Myers, Elena Witt & Reghan Wohlrab

Institution: **Viterbo University**
Faculty Mentor: **Robin Haugh**

Discipline: **Nursing**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Fine Arts Center Main Theater Lobby - Poster # 40***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

This presentation focuses on the various undesirable health outcomes that occur due to several social determinants of health in disadvantaged populations. Many rural areas suffer from inadequate health care due to a shortage of funding, employment, specialized care, and resources. Review of literature revealed different obstacles to health care in disadvantaged populations. The authors personally witnessed rural health inequities during a one-week immersion experience. Findings revealed five recurring themes: populations in rural areas have worse health outcomes than urban areas; social and physical characteristics in disadvantaged populations lead to increased health disparities; lack of access to health care in disadvantaged populations leads to increased medical risk factors; poor environmental factors negatively affect health behaviors; and, individual perceptions about health and well-being may negatively affect health outcomes in disadvantaged populations.

Keywords: disadvantaged populations, rural health, social determinants, outcomes, vulnerable populations



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE RESEARCH SYMPOSIUM

The Ethics of Vaccinations

Zaria Beyer

Institution: **Viterbo University**
Faculty Mentor: **Dorothy Lenard**

Discipline: **Ethics**

Presentation Type: **Poster Presentation**

Presentation Location: **Nursing Center Room 195 - Poster # 3**

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

The debate surrounding the ethical implications of vaccinations and vaccination mandates is a highly discussed topic in modern society. This project will focus on analyzing these ethical implications surrounding vaccinations as a whole with discussions focused on supporters of vaccinations as well as those opposed to vaccinations. Multiple sources and organizations were considered while gathering the information placed in this project. Some of these sources will include analysis of organizations such as the Center for Disease Control and Prevention (CDC), the World Health Organization (WHO), the American Academy of Pediatrics, and the Anti-Vaccination League of America (AVLA). Research on this project will primarily focus on the United States of America, with a small analysis of the topic from a global perspective. The ethical implications surrounding vaccinations has been a long-standing debate, however with further education of the public both sides may have a greater likelihood of coming to a consensus over the topic.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

The Effect of Ethanol on the Microbiome and Anxious Behavior in a Rat Model

Theodore Braman

Institution: **Viterbo University**
Faculty Mentor: **Dr. Charles Lawrence**

Discipline: **Biology**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Fine Arts Center Main Theater Lobby - Poster # 36***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Alcohol is one of the most commonly used substances in the world (Hayton et al., 2011) and has a high comorbidity with anxiety disorders (George, et al., 2007). It is not clear, however, if alcohol consumption increases anxiety, or if anxious behavior is a precursor to excessive alcohol use. Our experiment supposed that alcohol consumption is a trigger for anxious behavior, due to the changes it causes to the intestinal microbiome.

Research regarding the intestinal microbiome is currently expanding as more and more data shows correlations between specific strains of bacteria, and behavioral outcomes. Alcohol is known to cause intestinal dysbiosis (Donnadieu-Rigole et al., 2018) but the specific bacterial strains it affects are not well studied.

Our experiment sought to identify these bacterial strains, and to identify what, if any, behavioral outcomes were associated with those bacterial changes. 20 rats were used to test our hypothesis – 10 experimental and 10 control. The experimental rats were given a solution of 20% ethanol-in-water for a three-hour period each day, over a course of six-weeks. Fecal samples were collected every five days and bacterial strains were identified using an ERIC-PCR. For the behavioral analysis, the rats were tested in an open field maze to identify differences in anxious behavior between the groups. Videos were manually scored and were cross-checked using EthoVision software.



VITERBO UNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

You Aren't Perfect: The Role of Basic Needs and Motivation on Perfectionism

Allison Dunne

Institution: **Viterbo University**
Faculty Mentor: **Dr. Michael Parker**

Discipline: **Psychology**

Presentation Type: ***Oral Presentation***

Presentation Location: ***Nursing Center 101 - 1:20pm***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

The current literature on perfectionism has a significant gap in that it has yet to address the motivational antecedents of perfectionism. The aim of this research is to address the relationships between regulatory focus (promotion and prevention), perfectionism, need threats, and cognitive rigidity. Promotion focus is a self-regulatory strategy in which our motivation is focused on approaching positive goals with eagerness, whereas a prevention focus is centered around avoiding negative outcomes and high vigilance. Cognitive rigidity refers to the preference individuals have for familiar situations and clear and quick answers to questions. The two studies being presented, used a survey (N = 241) measuring indices of basic psychological needs (autonomy, competence, and relatedness to others), motivation, cognitive rigidity, and nine facets of perfectionism. An experiment (N = 300) measured these same variables, but manipulated threatening information about basic needs (using false personality feedback). Based on prior theories suggesting perfectionism is multidimensional, we propose that two distinct processes lead to different manifestations of perfectionism. The positive aspects of perfectionism (e.g., high standards) were predicted by need satisfaction and a promotion focus. The negative aspects of perfectionism (e.g., reactivity to mistakes) were predicted by prevention focus and cognitive rigidity. Together these studies support the hypothesis that basic psychological need satisfaction and frustration precede the two types of perfectionism, and they provide a motivated social cognitive framework to explain the origins of perfectionism. Implications for theory and future research will be discussed.



VITERBO UNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

The Safety and Efficacy of Intravenous Ferumoxytol versus Intravenous Iron Dextran in Pediatric Patients with Iron Deficiency

Melissa Edgar

Institution: **Viterbo University**

Discipline: **Medical**

Faculty Mentor: **Nancy Fisher, MBA, Jennifer Orozco, MD**

Presentation Type: **Oral Presentation**

Presentation Location: **Fine Arts Center 204 - 12:40pm**

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Intravenous (IV) ferumoxytol is not approved by the US Food and Drug Administration for use in pediatric patients, ages 0-18 years. Our objective was to compare both the efficacy and the safety of IV iron dextran, the gold standard, versus IV ferumoxytol in a pediatric population. We conducted a retrospective chart review of 99 pediatric patients, ages 0-21 years, who were diagnosed with iron deficiency and treated with either IV iron dextran or IV ferumoxytol from January 2014 to June 2019. This study included patients with a BMI ≥ 15 mg/kg². All hypersensitivity reactions were determined by independent chart review for associated toxicity. Efficacy was compared between the groups by evaluating the mean change in pre-infusion (within 90 days) and post-infusion (weeks 1-6) hemoglobin and ferritin values. Of the 166 infusions, 61 infusions (37%) were of IV iron dextran, and 105 infusions (63%) were of IV ferumoxytol. Mean age and BMI for the IV iron dextran and IV ferumoxytol groups were 12.0 years vs 19.4 years ($p < 0.0001$) and 21.6 kg/m² vs 26.5 kg/m² ($p < 0.0001$), respectively. The changes in mean hemoglobin value for the iron dextran and ferumoxytol groups were 2.01 ± 2.40 g/dL and 2.14 ± 1.57 g/dL ($p = 0.4$), and the changes in mean ferritin values were 91.22 ± 44.40 ng/mL and 153.35 ± 131.03 ng/mL ($p = 0.06$), respectively. Of the 166 infusions, overall there were 7 hypersensitivity reactions (4.4%, $p = 0.42$) with 2 being from IV iron dextran and 5 being from IV ferumoxytol. There was similar efficacy between IV iron dextran and IV ferumoxytol in the pediatric study population. In comparison to IV iron dextran, IV ferumoxytol appears to also be safe for use in pediatric patients.



VITERBO UNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Herb and Blossom Shelf Life with Hillview Urban Agriculture Internship

Alissa Griswold

Institution: **Viterbo University**
Faculty Mentor: **Michael Alfieri**

Discipline: **Urban Agriculture**

Presentation Type: ***Oral Presentation***

Presentation Location: ***Nursing Center 202 - 12:40pm***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Hillview Urban Agriculture is a nonprofit grassroots organization that focuses on the La Crosse food desert and getting sustainable, fresh vegetables to underprivileged individuals. To accomplish this mission, Hillview focuses on three components of a healthy food system which consists of soil, growing, and food. The purpose of this study was to determine the desired packaging and shelf life of herbs and edible blossoms for production. In winter, borage, nasturtium leaves and blossoms, cilantro, basil, and parsley were already being grown in an urban greenhouse for Hillview's annual plant sale. Determining the production efficiency and value of these herbs and blossoms is essential for creating revenue at local food co-ops. Over 20 plants of each herb/blossom were grown, pruned, and recorded their average shelf life. The results of the study suggest which herbs and blossoms are best for retail purposes.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE RESEARCH SYMPOSIUM

The Unique Print: Pushing the Traditions of Art through Monotypes

Ashlee Jeffers

Institution: **Viterbo University**
Faculty Mentor: **Lisa Schoenfielder**

Discipline: **Art**

Presentation Type: ***Oral Presentation***

Presentation Location: ***Nursing Center 101 - 12noon***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

My undergraduate research involves a desire to deepen my knowledge of printmaking by working with Dr. Schoenfielder in preparation for attending the summer print workshop with Professor Jillian Sokso who is teaching "Monotype/Monoprint Panoply" from July 1-6. At this workshop I would be a Participant Observer using qualitative research strategies that were introduced through the concepts of phenomenological inquiry, hermeneutical perspective and participant observation in my introductory art education course; Concepts in Art Education. My primary goal in summer undergraduate research is to further my art and knowledge of printmaking but working as a Participant Observer will make my art experience considerably more meaningful. Art education majors must choose an area of concentration within the study of studio art. My research concentration is printmaking. Taking a participant observer's position to my work in the summer with Lisa and the following workshop in Nebraska will give me an educator's perspective to share with others at the Seven Rivers Research and in my future pursuits. I chose to study with Jillian Sokso out of the 12 noteworthy Professors because of the nature of my botanical drawings and prints. Here is a description of her process: I begin working by making a series of drawings and stencils with imagery pulled from photographs I take from the environment and other inspiration resources: textile patterns, architecture, geologic forms, landscape and vegetation. I work with stencils and print media plates/matrixes in screen printing (serigraphy), etching, and relief. After laying down flat and variegated areas of color with relief ink, I work with the various matrixes to build up a composition. Each work, while employing reproducible media, is one of a kind. I do not edition my prints, so I think of them as drawings or paintings more than anything. Works on paper for me are a collaboration.



VITERBO UNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Perceptions of the Effectiveness of Mental Health Services in Schools

Kaitlyn Kirtz

Institution: **Viterbo University**
Faculty Mentor: **Janet Holter**

Discipline: **Social Work**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Nursing Center Room 195 - Poster # 13***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Limited resources are available to provide students with mental health assistance creates significant barriers in mental health issues in children (Dowdy et al., 2015). Schools are an excellent setting for targeting children's mental health and their academic performance (Reinke et al., 2011). Understanding school staff perceptions of needs regarding mental health services for students can be beneficial.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE RESEARCH SYMPOSIUM

Role of Biochemical Components of the Tumor Microenvironment on Cancer Progression

Hannah Krause

Institution: **Viterbo University**

Discipline: **Biology**

Faculty Mentor: **Dr. Pilar de la Puente**

Co-Authors: **Kristin Calar**

Presentation Type: **Poster Presentation**

Presentation Location: **Fine Arts Center Main Theater Lobby - Poster # 32**

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Since only 20% of a tumor is comprised of cancerous cells, there is often a great amount of dissonance observed between in vitro and clinical models of cancer. Traditional 2D cell cultures only take these cancerous cells into account, omitting the other 80% of the tumor. Our 3D engineered tumor microenvironment (3DeTME) is a patient-specific model that incorporates more aspects of the tumor in order to better parallel clinical drug efficacy. Biochemical components were studied to determine their role on cancer cell proliferation in the 3D model. The first of these, fetal bovine serum (FBS), is a common xenogeneic supplement in cell media that may introduce inconsistencies between models of cancer, especially one that is specific for a single patient. Triple negative breast cancer cells (MDA-MB-231) were grown in the 3DeTME with media supplemented with 10% FBS or 10% human plasma. Cell proliferation was assessed on days 0, 3, and 7 by flow cytometry. Though FBS-supplemented media promoted more growth than plasma, plasma-supplemented media could be a viable option to better replicate tumor growth in vivo. Exosomes and microvesicles are also present in the plasma is used to make the 3DeTME. Since they have been shown to play a role in intercellular communication and metastasis, their effects on cancer cell proliferation were measured. Exosomes and microvesicles were removed from plasma by ultracentrifugation. 3DeTME cultures were grown in plasma containing only exosomes, only microvesicles, both exosomes and microvesicles, or neither. Cell proliferation was assessed on days 0, 3, and 7 via flow cytometry. No conclusive effects of the extracellular vesicles on cancer cell proliferation were determined.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE RESEARCH SYMPOSIUM

Children and Homelessness

Harley Large

Institution: **Viterbo University**

Discipline: **Social Work**

Faculty Mentor: **Matthew Bersagel-Braley**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Nursing Center Room 195 - Poster # 5***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

The population of Wisconsin had over 4,000 individuals who were homeless on any given night in 2018 (United States Interagency Council on Homelessness, n.d.). Children who lack the stability of a home or proper education have significant cognitive deficits, and seventy-five percent of homeless children under the age of five have at least one major cognitive delay (Firesteel, 2014). The challenge with cognitive delays in children requires some form of an intervention. A qualitative study was conducted on the effects of homelessness on children and their education by reviewing literature and speaking with key informants. An additional portion of research was investigated as to what professionals can do inside and outside of the classroom. In addition to professionals inside and outside of the classroom, there was evidence stating teachers who provide a safe and nurturing environment help children feel less socially alienated. Counseling services may be provided in schools for additional resources for students. These resources have proven effective; however, some students may not have access to the resources. Research concluded that additional funds are necessary for the McKinney-Vento Homeless Assistance Act.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Examination of Hole Size and Shape in Mason Bee Nesting Preferences

Thomas MacGregor

Institution: **Viterbo University**
Faculty Mentor: **Dr. Ted Wilson**

Discipline: **Biology**

Presentation Type: ***Oral Presentation***

Presentation Location: ***Nursing Center 202 - 1:20pm***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Across the United States, pollinator populations are declining. This is problematic since about 1/3 of our food comes from animal-pollinated crops. As our demand for these crops increases, pollinators are not able to keep up. In this study, we attempted to make suitable nesting tubes in houses for the orchard mason bee *Osmia lingaria*, a very efficient and native pollinator. Various hole diameters and shapes of nesting tubes were used in order to discover whether there was a preference of one over another. The results showed that there were many other species that utilized the house other than mason bees. We attempt to discuss some of these interactions and make suggestions for similar research.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Racist Stereotypes of African American Students in Wisconsin's Education System

Miranda Myszka

Institution: **Viterbo University**

Faculty Mentor: **Matthew Bersagel Braley**

Discipline: **Education and History**

Presentation Type: **Oral Presentation**

Presentation Location: **Nursing Center 201 - 1:40pm**

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Dr. Henry Louis Gates Jr. presents a framework in his book *Stony The Road* about the cyclic stereotypes of African Americans. One can use this framework to think about Wisconsin's educational disparities today. Reflecting on recent statistics, implicit biases against African American students can be seen in the way African American students are advised, tracked in classes, and disciplined. This presentation aims at using Gate's framework to understand Wisconsin's racial disparities in hopes of improving education for African American students.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE RESEARCH SYMPOSIUM

12-Week Vegetarian Diet Intervention Effect on Inflammatory Status and Cardio-Metabolic Parameters

Holly Nelson

Institution: **Viterbo University**

Discipline: **Nutrition and Dietetics**

Faculty Mentor: **Maria Morgan-Bathke**

Co-Authors: **Lara Boyum**

Presentation Type: **Poster Presentation**

Presentation Location: **Fine Arts Center Main Theater Lobby - Poster # 15**

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Obesity, the most common nutritional problem in the United States, is now recognized to be associated with both systemic and adipose tissue inflammation (1-3). It is hypothesized that this pro-inflammatory environment leads to some of the co-morbidities associated with obesity such as type 2 diabetes, cardiovascular disease and cancer (4-10). The role of inflammation and these co-morbidities has been described in some cell and animal models (11-13), however, it remains poorly understood in the human condition.

In this study, we aim to determine if providing a vegetarian diet intervention to individuals with obesity over a twelve-week period can reduce chronic inflammation as well as improve cardio-metabolic parameters that are precursors to the co-morbidities associated with obesity. We will define the variations, if any, in cardio-metabolic parameters such as: lipid profile, fasting blood glucose, resting energy expenditure, blood pressure, and body composition between the vegetarian diet intervention and the control diet intervention. If there are significant differences in inflammatory status as well as cardio-metabolic parameters, in the vegetarian diet intervention from baseline measurements we can ascertain that the implementation of a vegetarian diet is able to modulate precursors of chronic disease in an obese population. If there is no difference in inflammatory or cardio-metabolic biomarkers among the two groups, we can analyze the food frequency questionnaires (FFQs) to determine if there are other dietary components that could be affecting the inflammatory and cardio-metabolic response. The findings and conclusions from this study are significant as they may assist in improving dietary guidelines for obese individuals. They will also highlight the role of a vegetarian diet in the pro-inflammatory environment associated with obesity and outline a potential health benefit of following a vegetarian diet.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Danaus plexippus Food Preferences in Correlation to Oviposition

Elaine Remus

Institution: **Viterbo University**
Faculty Mentor: **Dr. Jennifer Sadowski**

Discipline: **Biology**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Fine Arts Center Main Theater Lobby - Poster # 39***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Over 90% of the population of monarch butterflies, *Danaus plexippus*, has disappeared in the last twenty years. The main reason behind this loss is habitat destruction, of both the Midwestern prairies that support monarch reproduction and the Oyamel fir forests in Mexico and Southern California that provide overwintering habitat. Midwestern prairies are particularly important to monarch survival and reproduction because they commonly host milkweed species, who act as the exclusive food source for the juvenile monarch caterpillar, however we do not fully understand how other prairie species may influence adult feeding behavior in monarchs. The objectives of this project were to quantify the frequency of nectaring and oviposition by monarch butterflies on six different milkweed species (*Asclepias* sp.) and four different blazing star species (*Liatris* sp.) in single species plant plots at Prairie Moon Nursery in Winona, MN. Results showed the highest frequency of overall nectaring on blazing star species over milkweed species, with the highest frequency species being *Liatris ligulistylis*, which could be due to their late bloom time in the summer. Monarchs utilize late blooming forbs to prepare for their long migration in early fall. There was variation in oviposition choices across the six milkweed species, and no oviposition behavior was observed on any blazing star species. These results have important implications for conservation actions; a mix of both milkweed and blazing star species are needed to best support monarch populations.



VITERBO UNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Nutrition in Midwest State Department of Corrections Prisons

Kelli Richardson

Institution: **Viterbo University**

Discipline: **Nutrition**

Faculty Mentor: **Ryan Anderson**

Co-Authors: **Lt. Cmdr. Mitchel Holliday**

Presentation Type: ***Oral Presentation***

Presentation Location: ***Nursing Center 201 - 12noon***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Improvement in nutritional care in corrections institutions may help affect the burden of nutrition related chronic health conditions. Even when nutritional standards are used, inconsistent use of standards and a lack of regulations may be leading to inappropriate or inconsistent nutrition care. Review of 19 Midwestern state department of corrections' menus and related analyses revealed excessive calorie and sodium offerings and low offerings of vegetables and dietary fiber on male menus. A majority of vitamin and mineral offerings met recommendations when reported; however, they were inconsistently and underreported across states. When reported, potassium and vitamin E were offered at less than recommended levels while sodium was excessively offered. Consistency in use of and increased accountability in meeting nutrition standards may improve nutrition care in correctional settings.



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7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

How Romance Between Mice Leads to Pi

Lucas Ritter

Institution: **Viterbo University**
Faculty Mentor: **Michael Wodzak**

Discipline: **Mathematics**

Presentation Type: **Oral Presentation**

Presentation Location: **Fine Arts Center 204 - 1pm**

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

There are many different techniques for calculating pi. This method demonstrates a new experimental tool to approximate it. Using the probability that two mice trapped in a maze will meet, we can derive a formula that approximates pi. When the maze grows, so does the precision of the approximation. The probability can also be approximated through experiment, simulated via computer.



VITERBO UNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Yahweh and the Concept of Herem in the Old Testament

Lauralee Rood

Institution: **Viterbo University**
Faculty Mentor: **Dr. Emily A. Dykman**

Discipline: **Religious Studies & Theology**

Presentation Type: ***Oral Presentation***

Presentation Location: ***Nursing Center 101 - 12:20pm***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

The research centered on why God would use the Israelites to inflict “Holy War” and Herem on all of His creation in the land of Canaan as warned in the Books of Deuteronomy and Joshua. Herem is defined as the selective extermination, including every man, woman, child, animal, and crops. No booty or plunder was to be collected, no covenants were to be formed, and there was to be no intermarrying from these tribes, or the Israelites would fall under the Herem. The research included reviewing seventeen scholarly articles regarding this topic, analyzing opinions from authors across history on the use of Herem in the Middle East, archeological evidence on Herem in the Middle East in ancient times, and numerous theological papers regarding why God would inflict Herem on his own creation. As a result of this research, it is believed that the Israelites trusted Yahweh, the Law, Joshua, and the promise to their ancestors of the Promised Land. Though we may never fully understand God’s ways or why He commanded the slaughter of the Canaanites, Christians have something the Israelites did not have: The ever-presence of God’s Son, Jesus, the forgiveness of sins, and the offering of entrance into heaven.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

ykkCD riboswitch mutation for fluorescent binding assays

Bryan Sengbusch

Institution: **Viterbo University**
Faculty Mentor: **Dr. Scott Gabriel**
Co-Authors: **Kyle Gossman**

Discipline: **Biology**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Fine Arts Center Main Theater Lobby - Poster # 38***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Riboswitches are mRNA structures that can express genes necessary for metabolite synthesis or transportation through different methods; one method is encoding an efflux pump¹. For the SMR (small multidrug resistance) family of efflux pumps a characteristic example is the ykkCD pump in *Bacillus subtilis* which is controlled by the ykkCD riboswitch². This riboswitch has an aptamer domain which binds specifically to its ligand tetracycline^{1,2}. If the ykkCD riboswitch sequence is mutated, tetracycline binding can be evaluated with fluorescent binding assays¹. In order to study this, a wild type ykkCD riboswitch was cloned into a Puc19 plasmid with an integrated T7 promoter to drive ykkCD expression. This construct was confirmed by double digest, which was checking for correct band size of ykkCD insert and then used as the basis for a quick-change mutagenesis procedure to produce targeted mutants of the ykkCD riboswitch which was confirmed by sequencing.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Ruth Behar: Identities Lost and Found in Immigration

Carson Skemp

Institution: **Viterbo University**
Faculty Mentor: **Jesús Jambrina**

Discipline: **Spanish**

Presentation Type: ***Oral Presentation***

Presentation Location: ***Nursing Center 101 - 12:40pm***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

My research focuses on the role of immigration and identity in the novel **Lucky Broken Girl** by Cuban American author Ruth Behar. This autobiographical novel presents the story of a young girl, who had just emigrated from Cuba to New York City in the late 1960s. I examine the connections between culture, immigration, and personal relationships in the novel. Furthermore, I explore how the themes of profound loss and change affect the protagonist, who, during her long convalescence due to a terrible car accident, can reflect on her entire experience as a new immigrant in America. I conclude that the unique cultural perspective provided by immigration strengthens personal bonds among those who come from different countries, transforming themselves and the social spaces where they reside. I will be looking at certain symbols and metaphors utilized throughout the novel, which illustrate the psychological and spiritual journey of the young protagonist. With my research I plan on exploring the often-underrepresented perspective of immigrants from within their own community.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

An Ekphrastic Study of Edgar Degas' Art

Sarah Trandahl

Institution: **Viterbo University**
Faculty Mentor: **Vickie Holtz Wodzak**

Discipline: **English Writing**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Nursing Center Room 195 - Poster # 14***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

My creative writing project is about connecting the abled to the disabled through the commonality of their beauty. Using Edgar Degas' art, ekphrastic, experimental contemporary poetry, and my own experiences with disability and dance, this poetry collection explores a vast range of ableism. Invisible disabilities are also highlighted in my poetry in the pieces that reflect my experiences with epilepsy. This collection is meant to offer accessibility, as there are various avenues to experience my poetry. By having my poems appeal to a wider variety of the senses than traditional poetry, I hope to invite people of different abilities to gain a sense of inclusion from this collection. The stark contrast of Degas' subjects in his paintings as either extraordinarily abled (like the dancers) or simply abled (like the bathing series or women pieces) offers a dynamic that my poetry comments on. As Degas portrays various bodies as beautiful through his art, I aim to take this portrayal further in application to disabled bodies through the art of poetry. A few influences on my work include Paisley Rekdal's *Animal Eye* and Matthea Harvey's *Pity the Bathtub Its Forced Embrace of The Human Form*. To set my work apart, I hope to keep the root of disability real in correspondence with a disability studies lens. My collection is organized into three sections, including, Self: my own balance between able and disabled, Ekphrastic: what Degas' art and his own disability depicts, and Other: the people around me and their different yet beautiful bodies.



VITERBOUNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Playing in the Woods: Harvest Moon and Pastoral Escapism

Claire Trussoni

Institution: **Viterbo University**

Discipline: **English Literature**

Faculty Mentor: **Susan Cosby Ronnenberg**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Nursing Center Room 195 - Poster # 10***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

My research is focused on analyzing the video game *Harvest Moon: A New Beginning* in parallel to the genre of the pastoral in the Early Modern English period—a genre of literature focused on the idealized world of rural and farm life. The field of game studies is a relatively new one, and there have been relatively few attempts to analyze a video game as an artistic work in its own right, so a part of my research on how that was I have read through several works in the early modern English period of the pastoral genre—poems by Christopher Marlowe and Sir Walter Raleigh, plays by William Shakespeare, and the well known *Arcadia* by Sir Philip Sidney. I have also read through theoretical papers and essays on how to analyze both these primary works, and how to analyze video games as artistic works. While reading these, I have also been playing through *Harvest Moon: A New Beginning* and comparing similar themes/tropes/motifs that I found between the two mediums. I found an abundance of similarities between the two, particularly in the themes of artificiality and roleplay.

This research has given me a greater understanding of how different tropes and aspects of the pastoral can change as mediums change. For example, the pastoral has always been used as a means of escape by urban readers. In video game format, that theme escalates as a player can lose themselves in the day-to-day aspects of running their imaginary farm, and getting on with the NPC townsfolk. Video games are one of the few truly interactive pieces of media, and learning how to critically examine the way that interactivity affects narrative will be vital in humanities research into this medium going forward.



VITERBO UNIVERSITY



7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Ethical Eating: The What, How, and Why of our Food System

Laura Weidemann

Institution: **Viterbo University**

Discipline: **Philosophy and Ethics**

Faculty Mentor: **Matthew Bersagel-Braley**

Presentation Type: ***Oral Presentation***

Presentation Location: ***Nursing Center 101 - 1:40pm***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Food ethics explores philosophical perspectives on our food system from production to food waste. Food is an essential part of every persons' life. Whether we produce it, work with it, cook it, or consume it, food is integral in our social and cultural gatherings and fellowships. Central to this comprehensive overview, the research focused on three main areas: food and sustainability/environment, social justice, and health/disease. The objective was to read and gather empirical studies and philosophical arguments that describe the challenges our food consumption habits pose to our social, economic, and ecological health and evaluate norms that might guide us toward more ethical eating. Information was gathered through reading journals, studies, and books to obtain a well-informed background of food ethics. Research was drawn from social and ethical analyses of food with both social-scientific and philosophy texts. Through learning the philosophical theories around food, local food trends, and theoretical applications pertaining to ethical eating, this project has led to philosophically informed guidance for asking questions of our food choices.



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7 RIVERS

UNDERGRADUATE
RESEARCH SYMPOSIUM

Morphological assays to test the functional interdependence of ALG-2 and IP3R3 in calcium regulation of ER to Golgi transport

Jennet Hojanazarova

Institution: **Waldorf University**
Faculty Mentor: **Dr. Jesse Hay**

Discipline: **Biology**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Fine Arts Center Main Theater Lobby - Poster # 28***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Cystic fibrosis, neurodegeneration, and type II Diabetes are examples of diseases where the rate of the ER to Golgi transport and ER stress are critical determinants in cellular damage. The rate and the health of the secretory pathway are dependent on the luminal ER Ca²⁺ levels. Inositol trisphosphate receptor type 3 (IP3R3) is involved in the homeostasis of Ca²⁺ in the ER and regulates ER to Golgi transport rates and cell growth (Vasseur et al., 2014). Apoptosis-linked gene 2 (ALG-2) acts as Ca²⁺ sensor at ER exit sites and adjusts secretion. Doing in vitro assays to test ER to Golgi transport in Normal Rat Kidney (NRK) cells will show us how IP3R3 and ALG-2 may work together to optimize the secretion and transport while also controlling and preventing ER stress.

Results: We knocked down IP3R3 and saw significant increase in transport. We knocked down ALG-2 and we saw some increase in transport, but not as much. When we knock them down together, we found similar result as knocking down ALG-2.

Conclusions: The effects of IP3R3 on ER to Golgi transport seem to require Alg-2 because the effect on secretion of knocking down IP3R3 is diminished in the absence of ALG-2. Thus, it appears that regulation of secretion by ER Ca²⁺ channels is mediated by the cytoplasmic Ca²⁺ sensor ALG-2.



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UNDERGRADUATE
RESEARCH SYMPOSIUM

Perceived Stress and Physical Health in La Crosse County Residents: The Intervening Effects of Education, Income, and Race

Abigail Benvenuto, Thomas Carlson, Danielle Langworthy & Elizabeth Schmitt

Institution: **Winona State University**
Faculty Mentor: **Amanda Brouwer PhD**

Discipline: **Psychology**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Nursing Center Room 195 - Poster # 8***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Introduction: Previous researchers have demonstrated that individuals with lower income, less education and those who represent the ethnic minority experience higher levels of stress and poorer health outcomes than those who are in the majority. Health disparities among La Crosse county residents also exist, but less is known about how socio-demographics affect the relationship between stress and physical health among these residents. Therefore, the current study was conducted to better understand how education, income, and race affect the relationship between stress and health among La Crosse County residents.

Methods: Participants (N=162, Mage=38.17, SD=12.53) answered questions about perceived stress, physical health, and socio-demographics. Moderation analyses were conducted to assess whether income, education, and race moderated the relationship between perceived stress and physical health.

Results: Neither income nor race were moderators in the relationship between perceived stress and physical health, but education was a significant moderator, $b = .77$, $t(139) = 1.98$, $p = 0.05$. As stress increased, individuals with a high school education or less experienced a greater decrease in physical health compared to individuals with some college education. No other education group differences were significant.

Discussion: Some college education may provide knowledge, resources, and opportunities to modify the negative effects of stress on health. That there were no moderation effects of income might suggest that monetary resources alone will not change the negative relationship between stress and health. It may be that knowledge of adequate coping skills may reduce the negative effects of stress on health. Lack of variability in race and income may have limited the ability to find significant moderation effects in the current study. Future researchers should explore causal relationships between socio-demographics and health and what elements of education influence the experience of perceived stress and coping.



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UNDERGRADUATE
RESEARCH SYMPOSIUM

F-19 NMR Determination of Relative Rate Constants for Hydrogen Abstraction by p-fluorophenyl Radicals from Fatty Acid Methyl Esters

Breanna Murray

Institution: **Winona State University**

Discipline: **Organic Chemistry**

Faculty Mentor: **Tom Nalli**

Co-Authors: **Rick Dorn**

Presentation Type: **Poster Presentation**

Presentation Location: **Fine Arts Center Main Theater Lobby - Poster # 25**

Poster Presentations:

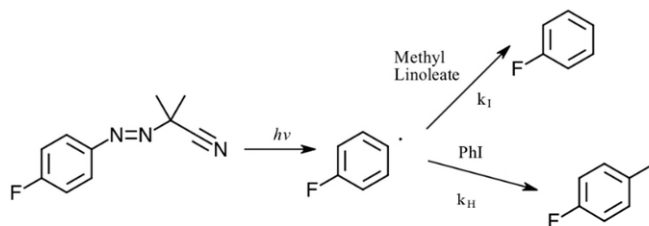
- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

Phenyl radicals are known to rapidly abstract hydrogens and add to double bonds; H-abstraction in particular is known to have biological significance. However, rate constants for H-abstraction by neutral phenyl radicals from biomolecules are largely unknown. The present research uses p-fluorophenyl radicals generated by the photolysis of fluorophenylazoisobutyronitrile (FPAIN), which allows for product yields to be measured using F-19 NMR. DFT calculations validate this method by showing very similar SOMOs for the unsubstituted phenyl radical and the p-fluorophenyl radical, as well as nearly identical Mulliken charges on the radical carbon. Reported rate constants for phenyl radical iodine abstraction from iodoarenes (iodobenzene and m-trifluoriodobenzene) ($k_I = 1 \times 10^8 \text{ M}^{-1} \text{ s}^{-1}$) were used as kinetic reference points for determining k_H for hydrogen abstraction from fatty acid methyl esters (FAMES) as models for organic lipids. Preliminary results for methyl linoleate show that $k_H = 8 \times 10^7 \text{ M}^{-1} \text{ s}^{-1}$.



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UNDERGRADUATE
RESEARCH SYMPOSIUM

Effects of Dextromethorphan on Sign and Goal Tracking

Alexis Salem

Institution: **Winona State University**

Discipline: **Psychology**

Faculty Mentor: **John Holden**

Presentation Type: ***Poster Presentation***

Presentation Location: ***Nursing Center Room 195 - Poster # 6***

Poster Presentations:

- 60-min poster session
- Odd-numbered present from 2p-3p
- Even-numbered present from 3p-4p
- *Peoples' Choice voting ends at 3:50p*

Oral Presentations:

- 10-12 minute presentation
- 3-5 minute Q&A
- 2 faculty judges, 1 room facilitator
- 5-min transitions

Abstract

This project is about reward-seeking behaviors under the influence of dextromethorphan, a widely available NMDA receptor antagonist, specifically sign tracking and goal tracking behavior. Glutamate activity is known to be involved in the manifestation of sign-tracking behavior, which itself may represent a impulsive/drug-dependence vulnerability; hence, we hypothesized that dextromethorphan may interfere with sign-tracking. Subjects (male Sprague-Dawley rats, n=22) were trained in a Pavlovian conditioned approach task, where sign-tracking was interaction with a retractable lever, and goal-tracking was inserting the head into a food dispenser. After initial training, subjects were administered dextromethorphan (40 mg/kg) in saline or saline vehicle alone. The study found that dextromethorphan significantly reduces sign-tracking, without having a comparable effect on goal-tracking behavior. The findings from this study can be useful in the field of addiction. Dextromethorphan may be helpful in reducing impulsivity and as such may be a useful adjunct treatment in rehabilitation.



VITERBOUNIVERSITY

Oral Presentations by Last Name

NRC = Nursing Center, FAC = Fine Arts Center

Start	Room	First Name	Last Name	Institution	Discipline
1pm	NRC101	Chase	Anderson	UW-Eau Claire	Environmental Studies
Title: Demographics and Activities of Tourists in Mozambique					
12:20pm	NRC202	Aleah	Anderson	UW-Eau Claire	Environmental Public Health
Title: Particulate Air Quality Around Wisconsin Frac Sand Mining					
12:20pm	NRC202	Connor	Barnes	UW-Eau Claire	Environmental Public Health
Title: Particulate Air Quality Around Wisconsin Frac Sand Mining					
12noon	NRC202	Madalyn	Bollig	Saint Mary's University of MN	Environmental Biology
Title: The Relationship Between Needlegrass (<i>Stipa spartea</i>) and Spotted Knapweed (<i>Centaurea biebersteinii</i>) in the Crex Meadows State Wildlife Area					
1pm	NRC202	Ben	Borash	Saint Mary's University of MN	Environmental Biology
Title: Modeling Human-Snake Conflict for Timber Rattlesnakes in Winona County, Minnesota					
12:20pm	FAC204	Zack	Bracken	Saint Mary's University of MN	Biology
Title: The effects of utero Atrazine exposure on <i>Mus musculus</i> GST expression mRNA in relationship to circadian rhythm					
1:20pm	NRC101	Allison	Dunne	Viterbo University	Psychology
Title: You Aren't Perfect: The Role of Basic Needs and Motivation on Perfectionism					
12:40pm	FAC204	Melissa	Edgar	Viterbo University	Medical
Title: The Safety and Efficacy of Intravenous Ferumoxytol versus Intravenous Iron Dextran in Pediatric Patients with Iron Deficiency					
12noon	FAC204	Kean	Fallon	UW-La Crosse	Mathematics
Title: Rainbow sums					
1:20pm	NRC201	Sam	Fonder	Saint Norbert College	Psychology
Title: Effects of Three Types of Attentional Focus on Standing Long Jump Performance					
12:40pm	NRC202	Alissa	Griswold	Viterbo University	Urban Agriculture
Title: Herb and Blossom Shelf Life with Hillview Urban Agriculture Internship					
12noon	NRC101	Ashlee	Jeffers	Viterbo University	Art
Title: The Unique Print: Pushing the Traditions of Art through Monotypes					
12:20pm	NRC202	Josephine	Killoren	UW-Eau Claire	Environmental Public Health
Title: Particulate Air Quality Around Wisconsin Frac Sand Mining					
1:40pm	NRC202	Jacob	Kramer	Saint Mary's University of MN	Biology
Title: A Report on Nocturnal Avian Mortality at Communication Towers and Buildings In and Near Winona, MN Due to High Cloud Cover					

Start	Room	First Name	Last Name	Institution	Discipline
1:20pm	NRC202	Thomas	MacGregor	Viterbo University	Biology
Title: Examination of Hole Size and Shape in Mason Bee Nesting Preferences					
12noon	NRC201	Miranda	Myszka	Viterbo University	Education and History
Title: Racialist Stereotypes of African American Students in Wisconsin's Education System					
1pm	NRC201	Quang Anh	Nguyen	Luther College	Psychology
Title: The effects of gender and marriage on Trauma, Meaning in Life, and Forgiveness in Haiti, Puerto and Nigeria					
1:40pm	NRC201	Kelli	Richardson	Viterbo University	Nutrition
Title: Nutrition in Midwest State Department of Corrections Prisons					
1pm	FAC204	Lucas	Ritter	Viterbo University	Mathematics
Title: How Romance Between Mice Leads to Pi					
12:20pm	NRC101	Lauralee	Rood	Viterbo University	Religious Studies & Theology
Title: Yahweh and the Concept of Herem in the Old Testament					
12:20pm	FAC 204	Natalie	Ruegsegger	Saint Mary's University of MN	Biology
Title: The effects of utero Atrazine exposure on Mus musculus GST expression mRNA in relationship to circadian rhythm					
1:20pm	NRC201	Devon	Silver	Saint Norbert College	Psychology
Title: Effects of Three Types of Attentional Focus on Standing Long Jump Performance					
12:20pm	NRC201	Migdalía	Simpson	UW-La Crosse	Psychology
Title: Mixed in the Media: Media Representation and Self-Identity of Multiracial Individuals					
12:40pm	NRC 101	Carson	Skemp	Viterbo University	Spanish
Title: Ruth Behar: Identities Lost and Found in Immigration					
1:40pm	NRC 101	Laura	Weidemann	Viterbo University	Philosophy and Ethics
Title: Ethical Eating: The What, How, and Why of our Food System					
12:40pm	NRC201	Chloe	Zielke	UW-Eau Claire	Sociology
Title: Religion and Its Linkage to the Wellbeing of the Chinese Elderly					

Poster Presentations by Last Name

KEY: NRC = Nursing Center Room 195, MTL = Fine Arts Center Main Theater Lobby

Poster Session Coordinators: NRC 195 = Kim Olson-Kopp, FAC MTL = Matthew Bersagel Braley

Odd #s = 2p-3p, Even #s = 3p-4p

Location	First Name	Last Name	Institution	Discipline
MTL - 31	Aleah	Anderson	UW-Eau Claire	Environmental Public Health
Title: Particulate Air Quality Around Wisconsin Frac Sand Mining				
NRC - 1	Alexa	Baker	Viterbo University	Social Work
Title: Evaluation of the Implementation of Trauma Informed Approaches in K-12 Schools				
MTL - 27	Alleah	Baltzer	UW-Eau Claire	Mathematics
Title: Analyzing Changes in Stock Pricing Data Using Bimodal Data				
MTL - 31	Connor	Barnes	UW-Eau Claire	Environmental Public Health
Title: Particulate Air Quality Around Wisconsin Frac Sand Mining				
MTL - 40	Hailey	Bell	Viterbo University	Nursing
Title: Social Determinants of Health in Disadvantaged Populations				
NRC - 8	Abigail	Benvenuto	Winona State University	Psychology
Title: Perceived Stress and Physical Health in La Crosse County Residents: The Intervening Effects of Education, Income, and Race				
NRC - 3	Zaria	Beyer	Viterbo University	Ethics
Title: The Ethics of Vaccinations				
MTL - 33	Abby	Bishop	UW-La Crosse	Exercise and Sport Science
Title: The Effects of the Ketogenic Diet on Body Composition and Performance in Resistance Training Female Athletes				
MTL - 36	Theodore	Braman	Viterbo University	Biology
Title: The Effect of Ethanol on the Microbiome and Anxious Behavior in a Rat Model				

Location	First Name	Last Name	Institution	Discipline
NRC - 8	Thomas	Carlson	Winona State University	Psychology
Title:	Perceived Stress and Physical Health in La Crosse County Residents: The Intervening Effects of Education, Income, and Race			
NRC - 11	Ingrid	Christopherson	Luther College	Psychology
Title:	Trauma, Meaning of Life, and Forgiveness in Haiti, Nigeria, and Puerto Rico			
MTL - 34	MacKenzie	Christy	UW-La Crosse	Nutrition
Title:	The Effects of a Ketogenic Supplement on Body Composition and Performance in Resistance Training Women			
MTL - 23	Vanessa	Czeszynski	UW-La Crosse	Aquatic Biology
Title:	Dissolved Organic Carbon: A Link Between Vital Processes in Streams and Lakes			
NRC - 7	Sarah	Eachus	Luther College	Psychology
Title:	Forgiveness as a Buffer to Psychological Distress and Negative Life Events in Guyana			
MTL - 40	Kyah	Flock	Viterbo University	Nursing
Title:	Social Determinants of Health in Disadvantaged Populations			
MTL - 20	Carl	Fossum	UW-Eau Claire	Biochemistry
Title:	Computation of Binding Free Energy of Tryptophan-Cosolute Complexes			
NRC - 9	Ember	Griehling	Luther College	Psychology
Title:	Implementing a Counseling Minor at Luther College			
NRC - 12	Carina	Hansen	Luther College	Psychology
Title:	Trends and Potential Causes of Obesity Among Preschoolers			
MTL - 29	Megan	Hickinbotham	UW-La Crosse	Geography and Earth Science
Title:	Organic and Carbonate Content from a Lake Sediment Core, South Central Wisconsin			
MTL - 28	Jennet	Hojanazarova	Waldorf University	Biology
Title:	Morphological assays to test the functional interdependence of ALG-2 and IP3R3 in calcium regulation of ER to Golgi transport			

Location	First Name	Last Name	Institution	Discipline
MTL - 35	Benjamin	Johnson	UW-Eau Claire	Biochemistry
Title: The Effects of Monomer and Polymer Cosolutes on the Intrinsic Fluorescence of Tryptophan and Escherichia coli prolyl-tRNA synthetase				
MTL - 18	Daniel	Johnson-Schunk	UW-La Crosse	Geography
Title: Biodiversity Characterization in a Native Prairie in Western Wisconsin using an Unmanned Aerial System (UAS) Imagery				
MTL - 26	Michaela	Jurewicz	Northland College	Chemistry
Title: Fluorescence in New World Flying Squirrels				
MTL - 31	Josephine	Killoren	UW-Eau Claire	Environmental Public Health
Title: Particulate Air Quality Around Wisconsin Frac Sand Mining				
NRC - 13	Kaitlyn	Kirtz	Viterbo University	Social Work
Title: Perceptions of the Effectiveness of Mental Health Services in Schools				
MTL - 32	Hannah	Krause	Viterbo University	Biology
Title: Role of Biochemical Components of the Tumor Microenvironment on Cancer Progression				
MTL - 37	Nico	Lang	UW-La Crosse	Synthetic Organic Chemistry
Title: Microwave-Assisted Efficient One-Pot Synthesis of Curcumin and Curcuminoids				
NRC - 8	Danielle	Langworthy	Winona State University	Psychology
Title: Perceived Stress and Physical Health in La Crosse County Residents: The Intervening Effects of Education, Income, and Race				
NRC - 5	Harley	Large	Viterbo University	Social Work
Title: Children and Homelessness				
NRC - 4	John	Lawlis	UW-La Crosse	Political Science
Title: Voting Against Party Interests: An Analysis of the Wisconsin State Legislature				
MTL - 24	Jessica	Liebau	UW Eau Claire	Biochemistry
Title: Investigation of Interactions Between Protein and Poly(ethyleneglycol) using Enzyme Kinetics and Fluorescence Studies				

Location	First Name	Last Name	Institution	Discipline
MTL - 24	Aubrey	Liew	UW-Eau Claire	Biochemistry
Title:	Investigation of Interactions Between Protein and Poly(ethyleneglycol) using Enzyme Kinetics and Fluorescence Studies			
NRC - 12	Abbie	Madson	Luther College	Psychology
Title:	Trends and Potential Causes of Obesity Among Preschoolers			
MTL - 33	Cassidy	McCann	UW-La Crosse	Exercise and Sport Science
Title:	The Effects of the Ketogenic Diet on Body Composition and Performance in Resistance Training Female Athletes			
MTL - 25	Breanna	Murray	Winona State University	Organic Chemistry
Title:	F-19 NMR Determination of Relative Rate Constants for Hydrogen Abstraction by p-fluorophenyl Radicals from Fatty Acid Methyl Esters			
MTL - 40	Derek	Myers	Viterbo University	Nursing
Title:	Social Determinants of Health in Disadvantaged Populations			
MTL - 22	Alexander	Narkiewicz-Jodko	UW-Eau Claire	Biochemistry
Title:	Crowding Effects on Prolyl-tRNA Synthetase Visualized via Atomic Force Microscopy			
MTL - 15	Holly	Nelson	Viterbo University	Nutrition and Dietetics
Title:	12-Week Vegetarian Diet Intervention Effect on Inflammatory Status and Cardio-Metabolic Parameters			
NRC - 2	Quang Anh	Nguyen	Luther College	Psychology
Title:	The effects of gender and marriage on Trauma, Meaning in Life, and Forgiveness in Haiti, Puerto and Nigeria			
MTL - 27	Logan	Pauly	UW-Eau Claire	Mathematics
Title:	Analyzing Changes in Stock Pricing Data Using Bimodal Data			
NRC - 9	Abigail	Pickett	Luther College	Psychology
Title:	Implementing a Counseling Minor at Luther College			
MTL - 39	Elaine	Remus	Viterbo University	Biology
Title:	Danaus plexippus Food Preferences in Correlation to Oviposition			

Location	First Name	Last Name	Institution	Discipline
NRC - 6	Alexis	Salem	Winona State University	Psychology
Title:	Effects of Dextromethorphan on Sign and Goal Tracking			
NRC - 8	Elizabeth	Schmitt	Winona State University	Psychology
Title:	Perceived Stress and Physical Health in La Crosse County Residents: The Intervening Effects of Education, Income, and Race			
MTL - 17	Cullen	Schull	UW-La Crosse	Organic Chemistry
Title:	Asymmetric Synthesis of Di- and Mono- Substituted Curcuminoids			
MTL - 38	Bryan	Sengbusch	Viterbo University	Biology
Title:	ykkCD riboswitch mutation for fluorescent binding assays			
MTL - 19	Chelsey	Sloan	UW-La Crosse	Geography
Title:	Collection & Initial Description of Sediment Core from Mud Lake in Jefferson County, WI			
MTL - 30	Casey	Sroda	UW-Eau Claire	Physics
Title:	Organic Light-Emitting Diode Fabrication and Exploration of the Organic Magnetoresistance Effect			
NRC - 14	Sarah	Trandahl	Viterbo University	English Writing
Title:	An Ekphrastic Study of Edgar Degas' Art			
NRC - 10	Claire	Trussoni	Viterbo University	English Literature
Title:	Playing in the Woods: Harvest Moon and Pastoral Escapism			
MTL - 22	Murphi	Williams	UW-Eau Claire	Biochemistry
Title:	Crowding Effects on Prolyl-tRNA Synthetase Visualized via Atomic Force Microscopy			
MTL - 40	Elena	Witt	Viterbo University	Nursing
Title:	Social Determinants of Health in Disadvantaged Populations			
MTL - 21	Ruth	Woehlke	UW-Eau Claire	Chemistry and Physics
Title:	Construction and Evaluation of Polycaprolactone Fibers for Drug Release Implants			

Location	First Name	Last Name	Institution	Discipline
MTL - 40	Reghan	Wohlrab	Viterbo University	Nursing
Title:	Social Determinants of Health in Disadvantaged Populations			
MTL - 16	Laura	Zinnel	UW-La Crosse	Mathematics
Title:	Anti-Schur numbers for $x_1+x_2=x_3$ in $[n] \times [m]$			



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UNDERGRADUATE RESEARCH SYMPOSIUM

Thank You!

On behalf of the Seven Rivers Undergraduate Research Symposium, we'd like to take this opportunity to express our gratitude to the following people/groups for making this event a reality:

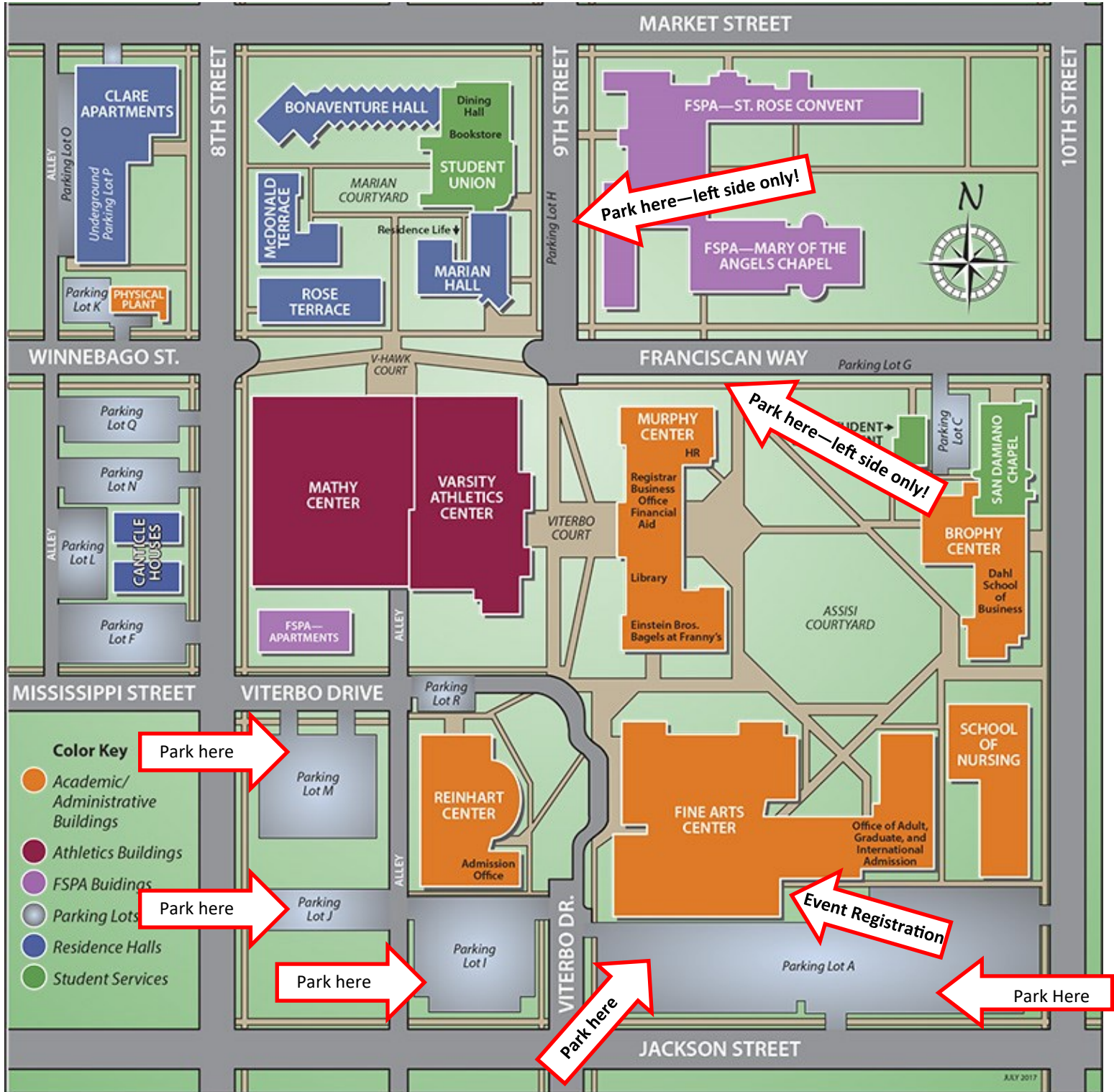
- **Aramark Services Team, Mary Simota & Kayla Sojka**
- **All Fine Arts Center Staff: Doug Wilken, Andy Nauman & Danita Doerre**
- **Copy Center Staff: Karen Hurtgen & Terry Massman**
- **All Volunteers! Students, Judges, Facilitators, and Session Coordinators**
- **Introductions: Dr. Tracy Stewart and Melissa Edgar**
- **Keynote: Dr. Paul Mueller**
- **DB Reinhart Ethics Institute: Nicole Van Ert**
- **Chris Sanger from Institutional Advancement and our generous benefactors**
- **R. Charles Lawrence and the Viterbo Summer Undergraduate Research Fellowship program**

And most importantly, all contributing Student Researchers/Presenters, including the faculty mentors who have supported them along the way

THANK YOU!



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