

Seven Rivers
Undergraduate
Research Symposium

ABSTRACT BOOK

*Friday, November 11, 2016
Viterbo University*

Important Information

- Abstracts are listed by presentation type; abstracts for oral presentations appear first followed by those for poster presentations.
- Within each presentation type, abstracts are listed alphabetically by presenter last name. If there is more than one presenter, authors' names will be listed in alphabetical order and the presentation will be organized by the first presenter's last name.
- Asterisks denote presenting authors; non-asterisked names denote non-presenting authors.
- The subsequent spreadsheets provide presentation details organized by oral presentation time & room and by poster number.
- More information is available online at www.viterbo.edu/sevenrivers.

Oral Presentation Rooms Assignments by Time Slot and Room

RC=Reinhart Center, NRC = School of Nursing Building

<u>Time Slot</u>	<u>Room</u>	<u>Research Area</u>	<u>Presenter</u>	<u>Institution</u>	<u>Presentation Title</u>
12noon	RC 201	Biology	Jeremy Heinle	St. Mary's Univ. of MN	Vascular Endothelial Growth Factor-B expression in Mice (Mus musculus) Exposed in utero to Atrazine
12:20pm	RC 201	Biology	Emma Akemann	Viterbo University	Luminol Detection of Blood Spatter After Exposure to Fire
12:40pm	RC 201	Molecular Biology	Acacia Wimmer	St. Mary's Univ. of MN	Expression of Hepatic Acetyl-CoA Carboxylase (ACACA) in Mice (Mus musculus) exposed in utero to atrazine
1pm	RC 201	Biology	Tori Voight	Viterbo University	Antigen specificity in symbiotic microbe-immune interactions
1:20pm	RC 201	Molecular Biology	Raelynn Speltz	St. Mary's Univ. of MN	Expression of Neuropilin-1 and VEGF- α in Mice (Mus musculus) brain tissue exposed in utero to atrazine
1:40pm	RC 201	Biology	Ruth Lee	Viterbo University	Effects of Thapsigargin and Concanavalin on Jurkat T-Cell IL-2 production
12noon	RC 130	Chemistry	Elizabeth Lawrence	Viterbo University	Determining the Leaching Rate of Florfenicol in Incorporated and Top-Coated Medicated Fish Feed
12:20pm	RC 130	Math	L. Buchanan, A. Ching, C. Magyar, H. Wu	UW-Eau Claire	The Moduli Space of Complex 2 3-dimensional Associative Algebras
12:40pm	RC 130	Combinatorics	Rita Post, Ryan Stodola, Jingtai Lui	UW-Eau Claire	Permutation Statistics in the Hyperoctahedral Group
1pm	RC 130	Chemistry	Will Jeffries	Viterbo University	Mn-doped ZnSe Quantum Dots for Optical Sensing
1:20pm	RC 130	--	--	--	
1:40pm	RC 130	--	--	--	
12noon	RC 127	Biology	Cassandra Baranczyk	Viterbo University	Winner and loser effects and the role of dominance hierarchies in the aggressive behavior of the Madagascar Hissing
12:20pm	RC 127	Biology	Ben Coleman	St. Mary's Univ. of MN	The Effects of TBX2 on Epiregulin Expression and ERK1/ERK2 Activation in MDA-MB-468 Cells
12:40pm	RC 127	Biology	Jessica Wisniewski	Winona State Univ.	Preliminary Study on Soil Richness and Diversity of Invertebrates in Three Different Habitats
1pm	RC 127	Biology	Fangluo Chen	McDaniel College	Visualizing Expression Patterns of neurexin genes in Zebrafish to Identify Potential Receptors for Neuer1
1:20pm	RC 127	Biology	Courtney Lynch	St. Mary's Univ. of MN	Epiregulin Enhances Growth of MCF10A Mammary Epithelial Cells and Prevents Apoptosis
1:40pm	RC 127	--	--	--	

Oral Presentation Rooms Assignments by Time Slot and Room

RC=Reinhart Center, NRC = School of Nursing Building

<u>Time Slot</u>	<u>Room</u>	<u>Research Area</u>	<u>Presenter</u>	<u>Institution</u>	<u>Presentation Title</u>
12noon	NRC 101	Philosophy	Amber Drewek	Viterbo University	Exploring the history of the Amish religion with regards to their baptism rituals
12:20pm	NRC 101	Spanish/Literature	Elaine Anderson	UW-La Crosse	Income inequality "In the Heights": The roles of gentrification and unjust urban planning in predominantly Latino immigrant neighborhoods
12:40pm	NRC 101	Literary Research	Erik Engelstad	Viterbo University	Latin American Poet Jorge Luis Borge's "Fervor de Buenos Aires"
1pm	NRC 101	Political Science	Dennis Brown	Viterbo University	Messaging in the 2016 Election
1:20pm	NRC 101	Music/History	Abigail Hall	Viterbo University	Music in the American Civil War: Developing American Culture
1:40pm	NRC 101	Creative Writing	Rachel Fries	Viterbo University	A Stranger in My Veins: Recounting My Myelofibrosis Diagnosis One Memory at a Time
12noon	NRC 104	Psychology	Christina Weldai	St. Mary's Univ. of MN	The exercise duration needed to gain cognitive and emotional benefits, when does it become most evident?
12:20pm	NRC 104	Psychology	Caitlin Miller	UW-Eau Claire	Insights into Writing in APA Style
12:40pm	NRC 104	Psychology	Sydney Eckert	Viterbo University	Examining Satisfaction and Gratitude in Married Couples
1pm	NRC 104	Sociology	Michelle Wagner and Yixuan Zhao	UW-Eau Claire and UW-Madison	An Analysis of Daily Activities and Their Associations of the Chinese Elderly
1:20pm	NRC 104	--	--	--	
1:40pm	NRC 104	--	--	--	

Poster Presentations by Room and by Number

KEY: RCB=Reinhart Center Boardroom, MTL=Fine Arts Center Main Theatre Lobby, NRC Foy=Nursing Center First Floor Foyer,
NRC 195=Nursing Center Room 195

<u>Room</u>	<u>Poster #</u>	<u>Discipline</u>	<u>Institution</u>	<u>Presenters</u>	<u>Poster Title</u>
RCB	1	Chemistry	Viterbo University	Tristyn Forget	Efforts Toward the Synthesis of Leucophytalin C
RCB	2	Chemistry	Luther College	Matthew Amann	Analyzing the Binding Relationship of Curcuminoids to Human Serum Albumin Using Steady State Fluorescence
RCB	3	Astronomy	UW-La Crosse	Rebecca Taylor	Finding New Galactic Interstellar Neutral Hydrogen Shells
RCB	4	Math	UW-Eau Claire	Haotian Wu, Christopher Magyar, Lucas Buchanan, Ai Lie Ching	The Moduli Space of Complex 2 3-dimensional Associative Algebras
RCB	5	Biochemistry	Viterbo University	Kyle Ernzen	Determination of DNA Binding Interactions for Individual Constructs of the PICKLE Protein's DNA Binding Domain in <i>A. thaliana</i>
RCB	6	Chemistry/Biochemistry	UW-Eau Claire	Stanford Mitchell and Olivia Hurst	Nanoparticle Effect on the Structure and Catalytic Function of <i>E. coli</i> Prolyl-tRNA Synthetases
RCB	7	Biochemistry	UW-La Crosse	Jake Faultersack, Jack Geiger, Brianna Haight	Interactions between model peptide antibiotics and lipid vesicles depend on peptide charge distribution and structure
RCB	8	Biochemistry	St. Olaf College	Laura Muehlbauer	Inhibition, binding affinity, and substrate specificity of human mitochondrial RNase P
RCB	9	Biology	UW-La Crosse	Christian Montes	Using DNA sequencing and microscopy to gather needed data on three mushroom candidates for the IUCN Red List
RCB	10	Biology	Waldorf University	Gulnara Novbatova	Characterization of PKA regulatory subunit, PRKAR1, in zebrafish
RCB	11	Biology	Edgewood College	Dominic Egizi	Designing an efficient and selective DNA detection cycle using catalytic G-quadruplex production

RCB	12	Biology	Waldorf University	Rick Young	DNA Damage Associated with Muscular Dystrophy
RCB	13	Biology	St. Mary's Univ. of MN	Jordyn Messling and Sarah Laska	The impact of the dietary supplement HemoHIM on humoral and cell mediated immunity
RCB	14	Biology	UW-La Crosse	Amanda Bradley	Plant host and geospatial effects on diversity of leaf-associated fungi in a tropical island ecosystem
RCB	15	Bio-Engineering	UW-Platteville	Jessica Symons	Determining Biochemical Response of Single Human Colorectal Carcinoma Cell to Cesium Using Microfluidics and Raman Spectroscopy
RCB	16	Biology	UW-La Crosse	Benjamin Schilz	Who got there first? Effects of yeast/bacterial colonization patterns on biofilm structure in kombucha
RCB	17	Biology	Edgewood College	Brooke Gillitzer	Celastrus orbiculatus and Celastrus scandens differentiation using G-quadruplexes
MTL	**				
MTL	18	Biology	Viterbo University	Brooke Johnston	The Effects of Stress on Tau Build-up in Long Evans Rats
MTL	19	Environmental Chemistry	UW-La Crosse	Phoenix Rogers, Marissa C. Despins, Khadel Akindolire-King	Methylmercury Contamination in the Lower Food Web of At-Risk Minnesota Rivers
MTL	20	Biology	Viterbo University	Desirae Schuh	Preference of Natural Sugar vs. Artificial Sweetener in Long-Evans Rats
MTL	21	Archaeology/GIS	UW-La Crosse	Andrew Anklam	Using LiDAR to Identify Historic Features in the Superior National Forest
MTL	22	Biology	Viterbo University	Ryan Cook	Shifts in antimicrobial gene expression in mouse model of self-antigen driven inflammatory bowel disease
MTL	23	Biology	Viterbo University	Chris Pasquale	Growth Comparison Between Three Varieties of Yellow Beans

MTL	24	Sustainability	Viterbo University	Tamara Anderson	Familiarization with the FSPA's Organic Garden Processes through Research on the Highest Producing Tomato Plant Varieties
MTL	25	Sustainability	Viterbo University	Janelle Earle	Effects of Endomycorrhizal Inoculant on Garlic Performance - FSPA Organic Garden
MTL	26	Sustainability	Viterbo University	Amanda Vetsch	Pests, Powder, and Permethrin: Eliminating Insects and Diseases in an Organic Garden
MTL	27	Social Work	Viterbo University	Rachel Brennan, Angi Hoch, Mallory Gehrmann	Examining the need for safe, stable housing in the Powell-Poage-Hamilton Neighborhood
MTL	28	Social Work	Viterbo University	Mollie Huepfel, Abby Hines, Janelle Earle	Impact of Revitalization on La Crosse Neighborhood Environments
MTL	29	Social Work	Viterbo University	Samantha Clark, Tori Hansen, Mercades Stark	Improper Disposal Methods of Hypodermic Needles and Medication in La Crosse Neighborhoods
MTL	30	Social Work	Viterbo University	Stacy Lehman, Katelyn Kaiser, Stephanie Varilek	Desire for a Food Oasis in a Food Desert
NRC 195	**				
NRC 195	31	Psychology	Winona State	Alyssa Klenotich	Exploring the Generalizability of a Self-As-Doer Intervention
NRC 195	32	Psychology	University of St. Thomas	Shelby Doherty, Tim Kohlmann, Kristina Bridger	A Historical View of Solitary Confinement: 1800 to mid-1900s
NRC 195	33	Psychology	Winona State	Jennifer Gauerke	The Effects of Biogenetic Explanations on Stigmas of Psychological Disorders
NRC 195	34	Psychology	Viterbo University	Dana Reedy	Health Behaviors Associated with Substance Use Disorder Recovery
NRC 195	35	Psychology	St. Mary's Univ. of MN	S. Lardy, E. Leif, K. Wobbe, K. Nicoson, B. Mockler, H. Potter, M. Martinez	#fitspiration: Social Media's Influence on Thin versus Fit Body Image Ideals

NRC 195	36	Psychology	University of St. Thomas	Stephanie Peters, Benjamin Bassier, Cortez Tillman	A Comparison of Social Management within Education: The 1920's vs 1960's
NRC 195	37	Psychology	Viterbo University	Hollyann Niemiec	The Prevalence of Mind-wandering in the Recovery Population
NRC 195	38	Psychology	UW-Eau Claire	Saudamini Agarwal and Samantha Storzer	Use or Reuse: How do university students consume liquids on campus?
NRC 195	39	Psychology	Viterbo University	Natalie Semrad	Exploring Relationship Maps Within the Substance Abuse Population
NRC 195	40	Psychology	Winona State	Samantha Lee & Grady Friedges	"Now it's get good grades to get a good job": A Qualitative Analysis of Motivation to Achieve Academically among Collegiate Athletes
NRC 195	41	Psychology	Winona State	Samantha Lee	Narcissism, Likability, and Extraversion: A Quantitative Analysis on the Perception of a Strangers' Instagram Profile
NRC 195	42	Psychology	University of St. Thomas	Erin Brine-Doyle, Megan Vaughan, Julie Plutt	Perceptions of Women's Mental Illness in a Changing Social Context
NRC 195	43	Psychology	Viterbo University	Allison Purvis	The Associations Between Level of Stress, Perceived Effect of Stress on Health, and College GPA
NRC 195	44	Psychology	University of St. Thomas	Melanie Brothers, Rachael Romnek, Zeinab Aden	Complexities of genocide: A historical analysis
NRC 195	45	Psychology	UW-Eau Claire	Nensi Xhunga and Lane Coulter	The Spread of Manspreading
NRC 195	46	Psychology	Viterbo University	Xavier Smart	Nature Experiences and Knowledge about the Natural World
NRC 195	47	Psychology	Viterbo University	Sydney Eckert	Examining Satisfaction and Gratitude in Married Couples
NRC 195	48	Psychology	Winona State	Ben Coady	Spirituality, Parental Support and their Effects Upon Well-being, and Flourishment

NRC Foy	**				
NRC Foy	49	Social Psychology	Winona State	Cassidy Kleven	The Decoy Effect
NRC Foy	50	Social Psychology	Viterbo University	Maria Michels	Why Won't You Just Listen to Me? Study About the Willingness to Compromise Between Liberals and Conservatives
NRC Foy	51	Nursing Ethics	Viterbo University	Tyler Rehnelt, Marissa Pieper, Jessica Sims, Nicole Fronek	Moral Triage: Admitting Social Ethics into Nursing Practice
NRC Foy	52	Nutrition & Dietetics	Viterbo University	Samuel McCormick	Dietary Intake and Fasting Blood Glucose in Individuals with Pre-Diabetes
NRC Foy	53	Nutrition & Dietetics	Viterbo University	Rebecca Brannan	Diabetes Education for Better Self-Management
NRC Foy	54	Nutrition & Dietetics	Viterbo University	Dana Swope	The Effect of Dietary MUFA's on Resting Energy Expenditure in Pre-Diabetic Individuals
NRC Foy	55	Nutrition & Dietetics	Viterbo University	Rebecca Brannan, Sam McCormick, Grace Huebner, Dana Swope	Lipid Panel and Fasting Blood Glucose Analysis of Individuals with Pre-Diabetes
NRC Foy	56	Nutrition & Dietetics	Viterbo University	Grace Huebner	Eight Week Dietary Intervention of The Effect of Pecans on Cardio-Metabolic Parameters: Body Composition
NRC Foy	57	Sociology	Viterbo University	Chantel Schulze, Elizabeth Knothe, Patricia Esparza	It's a Beautiful Day in the Neighborhood: Leveraging Community Assets and Anchor Institutions in South La Crosse
NRC Foy	58	Business	Viterbo University	Katie Mormann	State of the Workforce 2016/2017: Employee Retention & Satisfaction
NRC Foy	59	Servant Leadership	Viterbo University	Kate Willadsen	Breaking Down Language Barriers for English Language Learners
NRC Foy	60	Education	Viterbo University	Danielle Gille	Serving in South Africa

NRC Foy	61	Art and Psychology	Viterbo University	Sara Wisniewski	The Impact of Art Therapy on Youth
NRC Foy	62	English and Psychology	Viterbo University	Jessi Lawrence	Creativity: Necessity For Development or Wasted Outlet
NRC Foy	63	English	Viterbo University	Ivy King	Analyzing Historical and Cultural Perspectives of Women's Roles in the Early Modern Period through John Webster's The Duchess of Malfi

Luminol Detection of Blood Spatter After Exposure to Fire

Emma Akemann*
Viterbo University

Faculty Mentors: Ward Jones, Tammy Clark, and Lee Bushong

Presentation Type: Oral Presentation

Presentation Location and Time: Reinhart Center Room 201, 12:20pm

ABSTRACT:

Arson is often used to hide or destroy physical evidence at the scene of a crime. Heat and smoke can destroy evidence, however, recovery of evidence is possible in some cases. Little is known about the means of finding and collecting bloodstain evidence in these situations. Fires may destroy or manipulate bloodstains, causing them to react differently to chemical enhancement by Luminol. In this study, bloodstain spatter was applied to drywall, appliance sheet metal, glazed tile, carpet and wood surfaces placed at three different heights in a burn room and exposed to live fire. The fire was extinguished by firefighting personnel followed by sample collection and Luminol analysis. In general, positive Luminol reaction was seen on materials that were below the smoke layer suggesting that high heat and smoke resulted in loss of Luminol detection. Of note, the blood spatter on the sheet metal below the smoke layer did not react to Luminol suggesting possible destruction of the sample via material heat transfer. In addition, removal of soot from samples above the smoke layer did not yield a positive result by Luminol even though some stains were visible under normal light. It was concluded that the smoke and high temperatures (over 800°F) affected the ability to confirm that the stains visible were indeed blood. This is critical when collecting blood evidence, and it must be acknowledged that even though it did not chemiluminesce, it may still be a blood sample relevant to the case in question.

Income inequality “In the Heights”: The roles of gentrification and unjust urban planning in predominantly Latino immigrant neighborhoods

Elaine Anderson*

University of Wisconsin-La Crosse

Faculty Mentor: Omar Granados

Presentation Type: Oral Presentation

Presentation Location and Time: School of Nursing Room 101, 12:20pm

ABSTRACT:

In this paper, I will demonstrate the role which gentrification plays broadly in creating an unjust environment for the original inhabitants of any given community, specifically in those communities in which the majority of residents are Latino immigrants. I will additionally investigate how city government action and inaction can impact these same communities. Throughout, I will focus on the concept of “escape”, and the distinct ways in which individual desire to escape neighborhood environments can affect the community at large.

In the musical theater show “In The Heights”, written by Lin Manuel Miranda, the protagonist Usnavi wishes to escape from his neighborhood in a very literal sense- a return to the Dominican Republic to reconnect with his heritage. Other characters in the musical embody less tangible methods of escape. All of these characters face challenges that are intertwined with their identities and social status as immigrants, but most notably with the restraints of their physical environment. Focussing on themes of anti-gentrification and pro-immigration, my intention is to investigate how the characters of “In The Heights” interact with their fictional world, the lived experience of their creator, and the reality that many immigrants face daily in the United States.

Exploring these themes in conjunction with Miranda’s show provides an opportunity to understand the profound capacity which these communities have to overcome limiting physical and political environments.

Winner and loser effects and the role of dominance behaviors in the Madagascar Hissing Cockroach

Cassandra Baranczyk*
Viterbo University

Faculty Mentors: Dr. Michael Alfieri, Dr. Jennifer Sadowski

Presentation Type: Oral Presentation

Presentation Location and Time: Reinhart Center Room 127, 12noon

ABSTRACT:

In many social animals, past encounters with conspecifics can have profound effects on subsequent interactions, e.g., the “winner and loser” effect. The “winner” effect is defined as an increased probability that an individual will win a future contest because they have recently won a past contest. The “loser” effect, on the other hand, is the increased likelihood that an individual will lose a future contest because they have recently lost a contest. The winner-loser effect has been studied in diverse animal taxa including mammals, birds, fish, and insects with some groups showing either winner or loser, both, or neither effects. In this study, the Madagascar Hissing Cockroach, *Gromphadorhina portentosa*, was examined to determine if one or both of these effects exist in this species. Male *G. portentosa* were individually isolated for four days before trials began. Focal individuals were picked at random and placed against either a “winning” or “losing” opponent. Winning opponents were defined as an individual that previously “won” all 3 contests in the baseline pilot study. Losing males were individuals that “lost” all 3 of their initial baseline contests. Trials were fifteen minutes long, during which, aggressive displays were tallied and recorded. After each trial, there was a ten-minute resting period before the focal individual was faced with his next opponent. Twenty focal males were paired with winning opponents and twenty focal males with losing opponents. In all twenty trials when a focal male was paired with a “winning” opponent, the focal male lost. Additionally, in all twenty trials when a focal male was paired with a “losing” male, the focal male won the contest. This research demonstrates that the predictability of the outcome of contests can be fixed based on past interactions and that both a winner and loser effect exists in male *G. portentosa*.

Messaging in the 2016 Election

Dennis Brown*

Viterbo University

Faculty Mentor: Dr. Michael Wodzak

Presentation Type: Oral Presentation

Presentation Location and Time: School of Nursing Room 101, 1pm

ABSTRACT:

Elections are stories to be that are both bought by and sold to the voter. The 2016 election had two polarizing candidates running two very different campaigns. Each of them had record high numbers of unfavourability, yet they were able to maintain a dedicated core of support through the primaries and on to the end. Each group had their narrative of the world and their contender, with one putting forth a story of unity and coalition while the other put forth a story of redemption and judgment. In this paper, we will look at these overarching messages, how these various messages were disseminated to the public and how the public accepted or rejected them.

The Moduli Space of Complex 2 | 3-dimensional Associative Algebras

Lucas Buchanan**, *Ai Lie Ching**, *Chris Magyar**, *Haotian Wu*
University of Wisconsin-Eau Claire

Faculty Mentor: Michael Penkava

Presentation Type: Oral Presentation

Presentation Location and Time: Reinhart Center Room 130, 12:20pm

ABSTRACT:

We have been studying moduli spaces of complex associative algebras on various \mathbb{Z}_2 -graded vector spaces. A moduli space of algebras consists of equivalence classes of isomorphic algebras, and a \mathbb{Z} -graded space has a decomposition into a direct sum of two subspaces, one called the even elements and the other the odd ones. There are 313 algebras in the space, of which 18 are families depending on a projective parameter. We have also studied how the algebras deform, and have classified them according to their deformation theory.

Visualizing Expression Patterns of *neurexin* genes in Zebrafish to Identify Potential Receptors for Neuer1

Fangluo Chen*, Brandon Rozanski, Majesta Kitts, Steven Viar
McDaniel College

Faculty Mentor: Cheng Huang, Ph.D.

Presentation Type: Oral Presentation

Presentation Location and Time: Reinhart Center Room 127, 1pm

ABSTRACT:

The diverse and beautiful body plans of multicellular organisms all initiate from a single cell. This underscores the amazing process of how a single cell can give rise to many cells destined to become profoundly different, a process known as cell fate specification that remains poorly understood. We seek to identify genes that regulate this process. By using blood cell specification in the zebrafish (*Danio rerio*) as a specific model system to address this broad question, we have identified a novel regulator of blood cell specification, the *neuer1* gene. Our current goal is thus to understand the mechanism of action of Neuer1, the presumptive *neuer1* gene product.

Through protein sequence and domain analyses, we discovered that the most prominent domain in Neuer1 is shared by the Neurexophilin proteins, a family of cell-signaling ligands that bind to a family of cell-signaling receptors known as Neurexins. This discovery prompted our hypothesis that Neuer1 may also function as a signaling ligand and bind to Neurexin receptors. However, zebrafish possesses six *neurexin* genes and poses the question of which, if any of the *neurexin* genes encodes the receptor for Neuer1. In order for Neuer1 and its corresponding receptor to bind to each other, these two gene products need to be located relatively close to each other. We thus reasoned that if we determine the expression pattern of each *neurexin* gene, the one that shares the same expression pattern as *neuer1* is likely to encode the receptor of the tentative Neuer1 ligand. We hence set out to determine the expression pattern of each of the *neurexin* genes in zebrafish.

Gene expression patterns can be visualized using the in situ hybridization (ISH) technique. This method takes advantage of the precise and specific binding between a specific mRNA (gene product) and its complementary RNA probe. If and only if that specific mRNA is expressed in a specific cell, the probe used will be retained by that specific cell. Since the probe is labeled and leads to a color reaction, only cells expressing that specific mRNA will become colored, revealing the expression pattern of which zebrafish cells express that specific gene. Naturally, the ability to visualize expression pattern of each of the *neurexin* genes depends on the availability of specific RNA probes that are complementary to each of the *neurexin* mRNA sequence. To this end, we attempted to clone cDNA fragments of each of the *neurexin* genes, which can then serve as templates for synthesizing corresponding RNA probes. Here, we present a progress report of the number of cDNA fragments we have cloned, the number of RNA probes we have synthesized, and our efforts to determine the expression patterns of a number of zebrafish *neurexin* genes.

The Effects of TBX2 on Epiregulin Expression and ERK1/ERK2 Activation in MDA-MB-468 Cells

Ben Coleman*

Saint Mary's University of Minnesota

Faculty Mentor: Dr. Matthew Rowley

Presentation Type: Oral Presentation

Presentation Location and Time: Reinhart Center Room 127, 12:20pm

ABSTRACT:

Breast cancer is a malignant tumor that starts in the cells of the breast. Each year it is estimated that over 230,000 women in the United States are diagnosed with breast cancer with 40,000 of those women dying from it. Many of these women who develop breast cancer have overexpression of the TBX2 transcription factor. Studies have found that TBX2 can function as an immortalizing gene by suppressing p19ARF and p21WAPI/CIPI allowing cells to bypass senescence. Various unpublished data sets suggest that the overexpression of TBX2 may control also epiregulin expression. Epiregulin is a member of the epidermal growth factor family and binds to the EGF receptors to induce intracellular signaling. An increase in epiregulin expression can increase the activation of ERK1/ERK2 leading to cell proliferation. Another potential pathway that TBX2 could promote breast cancer. The objective of this experiment was to determine if there was an effect on epiregulin expression and an increase in ERK1/ERK2 activation in response to TBX2. In this experiment TBX2 was overexpressed in the MDA-MB-468 breast cancer cell line using a lentivirus and the effect of TBX2 on expression of epiregulin and activation of ERK1/ERK2 was determined.

Exploring the history of the Amish religion with regards to their baptism rituals

Amber Drewek*
Viterbo University

Faculty Mentor: Diana Cataldi

Presentation Type: Oral Presentation

Presentation Location and Time: School of Nursing Room 101, 12noon

ABSTRACT:

The Amish can be found throughout the United States, yet their lives are quite different from that of our own. By examining the history and customs of the Amish, a greater understanding can be found as to why their lifestyle is the way that it is, and how well their pacifistic system actually works. Baptism specifically is an important part of Amish society and gives us great insight into their lives as it impacts everything from their governance to their marriages. Looking at this then, we are able to get a better understanding of their philosophies, and how they answer the big questions about the world such as: how does one live a good life, and what is most important?

Examining Satisfaction and Gratitude in Married Couples

Sydney Eckert*

Viterbo University

Faculty Mentor: Stephanie Thorson-Olesen

Presentation Type: Oral Presentation

Presentation Location and Time: School of Nursing Room 104, 12:40pm

ABSTRACT:

Although a great deal of research on marriages focuses on the reason for dissolution, it is also important to study marriages that stay together. Marital satisfaction and dissatisfaction have emotional and physical implications. Research demonstrated that individuals in unsatisfactory marriages report greater levels of physical and mental health problems compared to those who find marriage satisfactory (Levenson et al., 1993). Congruently, satisfied couples reported being in better physical and psychological health than dissatisfied couples. Marital satisfaction is characterized as the subjective evaluation of an individual's marriage. While different factors contribute to positive evaluations, Lambert and Fincham (2011) found a causal relationship between expression of gratitude and positive partner perception. As a result, the purpose of the proposed research is to explore marriage satisfaction in relation to gratitude.

Participants were recruited using convenience sampling utilizing the internet and social media advertisements. Participants were directed to an online survey which included the informed consent, demographic questionnaire, and the Couples Satisfaction Index (CSI) to measure relationship satisfaction (Funk & Rogge, 2007), and the Gratitude, Resentment and Appreciation Test (GRAT) to measure dispositional gratitude (Watkins, Woodward, Stone & Kolts, 2003). The study used a quantitative correlational survey research design.

Corresponding with prior research and confirming the hypothesis, the correlation between marriage satisfaction and gratitude was significant. Further, the relationship was positively correlated. With half of marriages in the United States ending in divorce, there is an immediate need for research examining factors that promote long-term, healthy marriages. The knowledge that increased gratitude within a marriage correlates with increased marriage satisfaction, therapists should look to incorporate therapeutic exercises designed to foster gratitude within a marriage.

Latin American Poet Jorge Luis Borge's "Fervor de Buenos Aires"

Erik Engelstad

Viterbo University

Faculty Mentor: Jesús Jambrina

Presentation Type: Digital Oral Presentation

Presentation Location and Time: School of Nursing Room 101, 12:40pm

ABSTRACT:

Conducting research in Latin American poetry is one way to begin to build an understanding of cultural competency. The motive behind my research project was to discover what type of city Jorge Luis Borges represented in his first published work, "Fervor de Buenos Aires". As Borge's work was originally published in Spanish, the majority of the research I completed was done in Spanish. As a native English speaker, this challenged me to use the different skills I had learned in my courses at Viterbo. I used two methods of literary research to complete the project: one, primary research, where I analyzed and interpreted the poems from my own point of view, and two, secondary research, where I incorporated what other critics of Borge's work have written to help me come to the conclusions of the mentioned research question. I found that the poem "Arrabal" explains most notably what type of city Borges portrays in the work. In "Arrabal" Borges claims to have felt Buenos Aires (his home city) and declares that this city is his home, and always will be his home. This research challenged me to research poetry in a second language and in the process, help me build an understanding of cultural competency through the medium of literary analysis.

A Stranger in My Veins: Recounting My Myelofibrosis Diagnosis One Memory at a Time

Rachel Fries*

Viterbo University

Faculty Mentor: Dr. Beth Marzoni

Presentation Type: Oral Presentation

Presentation Location and Time: School of Nursing Room 101, 1:40pm

ABSTRACT:

“A Stranger in My Veins” is a creative nonfiction project that explores the slow, disturbing, and often overwhelming effects of cancer on my life and relationships. Stemming from events experienced over the past three years, this memoir includes short essays addressing the pain, exhaustion, joy, and comfort cancer has brought me as I struggle to accept a “new normal” life after a bone marrow stem cell transplant. In particular, I meditate on my relationship with my mother, who was my primary care-giver when I was ill, as well as my own thoughts and emotions, especially as the distance of time continues to clarify my experience for me. This presentation will focus on my writing about cancer as a patient, a student, and a daughter. In addition to sharing excerpts from my memoir, I will talk about the methods used to approach and execute my subject matter, and explain how the essence of time shapes writing in the genre of creative nonfiction.

Music in the American Civil War: Developing American Culture

Abigail Hall*

Viterbo University

Faculty Mentor: Dr. Mary Ellen Hauptert

Presentation Type: Oral Presentation

Presentation Location and Time: School of Nursing Room 101, 1:20pm

ABSTRACT:

This project involved examining effect of the American Civil War on the development of the American music culture. The goal was to highlight the abundance and significance of popular music during the Civil War. This was done by examining primary and secondary sources, and by traveling to hear Civil War music performed. Upon examination of research, the conclusion can be reached that popular music was established in the United States in the antebellum era and the Civil War created a larger demand. Civil War music offers a glimpse at the emotional, spiritual, and social dimensions of the era, especially during a time of conflict and struggle. Equally, one can't discount the popular distribution of Civil War music in the 1860s as a printed media because it shows the cultural importance and development of music in the United States. Politically, the music of the Civil War helped to define divisions between neighbors. However, numerous songs traversed divisions because they focused on the shared human experiences of war rather than the political issues.

Vascular Endothelial Growth Factor-B expression in Mice (*Mus musculus*) Exposed in utero to Atrazine

Jeremy Heinle**, *Raelynn Speltz*, *Acacia Wimmer
Saint Mary's University of Minnesota

Faculty Mentor: Dr. Debra Martin

Presentation Type: Oral Presentation

Presentation Location and Time: Reinhart Center Room 201, 12noon

ABSTRACT:

Atrazine, an herbicide regularly used across the United States, is found in ground water where it does not easily break down. Ground water concentrations higher than the EPA limit of 3 ppb have been detected, raising concerns about health issues since atrazine is a known endocrine disruptor. One protein of interest is Vascular Endothelial Growth Factor-B (VEGF-B) due to its role in metabolism, specifically with the regulation of fatty acid uptake. A recent study by Jin (2014) showed that mice exposed chronically to atrazine had increased serum-free fatty acid levels. VEGF-B is expressed in skeletal muscles and is involved in endothelial cell physiology. VEGF-B regulation has been examined as a potential therapy for metabolic diseases such as diabetes and obesity. In this experiment, VEGF-B levels were determined by western-blot of left bicep muscle samples from 9 week old mice pups that were exposed to 0 ppb (n=16), 3 ppb (n=15), and 30 ppb (n=18) atrazine in utero. Preliminary results show a decreasing trend in muscle VEGF-B levels as exposure to atrazine in utero increased suggesting that VEGF-B expression is negatively affected by exposure to atrazine, possibly affecting the regulation of fatty acid uptake.

Mn-doped ZnSe Quantum Dots for Optical Sensing

William Jeffries*

Viterbo University

Faculty Mentor: Dr. Emily McLaurin

Presentation Type: Oral Presentation

Presentation Location and Time: Reinhart Center Room 130, 1pm

ABSTRACT:

Imposing redox surface chemistry on nanocrystals to optically sense thiol substituted biological analytes with Mn(II)-doped nanocrystals (NCs) is presented. Glutathione (GSH) is a vital antioxidant in the brain for the detoxification of reactive oxygen species, and patients with dementia (Parkinson's disease and Alzheimer's disease) have demonstrated varying associations of GSH levels. This study integrated Mn(II)-doped ZnSe NCs with varied ZnS solvent shell densities, and were made water soluble through SiO₂ shell addition to further optimize the NCs for biological based sensing. Manganese dopant ions are actively localized on or near the NC surface, therefore changing the ZnS shell thickness allowed for controllable mitigation of the interaction between Mn dopant ions and thiol reducing agents. Fluorescence titrations of the NCs with thiol agents yielded different sensitivities across multiple solvent shell thicknesses. Stronger photoluminescence (PL) responses were seen for shells 2-4 layers thick, while thicker shells blocked thiols from reaching the NC surface and caused lower PL intensities. Results indicate that Mn:ZnSe/ZnS@SiO₂ quantum dots show enhanced and tunable luminescence allowing them to serve as turn on sensors while in the presence of thiols. This enhancement of NC sensing allows for multiple applications of intra-cellular imaging within medicine and biological disciplines.

Determining the Leaching Rate of Florfenicol in Incorporated and Top-Coated Medicated Fish Feed

Elizabeth Lawrence*
Viterbo University

Faculty Mentor: Kyle Backstrand

Presentation Type: Oral Presentation

Presentation Location and Time: Reinhart Center Room 130, 12noon

ABSTRACT:

Aquaculture contributes largely to the supply of fish for consumption but infections that arise within fish populations threaten production. Florfenicol (FFC) is an FDA approved antibiotic that can be used to treat some infections and is delivered to the fish via their feed. The feed is medicated either by means of top-coating powdered FFC onto the feed or by evenly incorporating it into the feed mixture prior to pelleting. This study aimed to determine and compare the leaching rates of FFC from a top-coated and incorporated version of a fish feed. Feed submersion was simulated in a lab and FFC content in the feed was analyzed using high-performance liquid chromatography. Results show that the half-life of FFC in the incorporated version of the feed was 3.4 times longer than that of the top-coated version ($t_{1/2 I} = 120 \pm 73$ and $t_{1/2 T} = 34.8 \pm 7.2$). These results indicate that the incorporation method of preparing medicated feed demonstrates a slower leaching rate, therefore potentially reducing the environmental impact and improving efficacy.

Effects of Thapsigargin and Concanavalin on Jurkat T-Cell IL-2 production

Ruth Lee*

Viterbo University

Faculty Mentor: Ward Jones

Presentation Type: Oral Presentation

Presentation Location and Time: Reinhart Center Room 201, 1:40pm

ABSTRACT:

IL-2 plays a direct role in stimulating the immune system to increase the number of Helper T cells (CD4+). IL-2 leads to T cell expansion and signal amplification in vivo. CD4+ T cells are important to normal immune function and decreased T cell counts can result in immunodeficiency. Thus, finding mechanisms to improve T cell counts is important. (Sei and Reich et al. 1995) reported phorbol myristate acetate (PMA) and Thapsigargin (TG) increased IL-2 production when used together. We proposed that Concanavalin A (ConA), a known activator, will significantly increase IL-2 production when paired with Thapsigargin (TG) treatment. Preliminary results suggest elevated ConA correlates with increased IL-2 production while high concentrations of TG inhibit ConA induced IL-2 production.

Epiregulin enhances growth of MCF10A mammary epithelial cells and prevents apoptosis

Courtney Lynch*

Saint Mary's University of Minnesota

Faculty Mentor: Dr. Matthew Rowley

Presentation Type: Oral Presentation

Presentation Location and Time: Reinhart Center Room 127, 1:20pm

ABSTRACT:

The beginning stages of metastatic breast cancer require the modification of many phenotypes such as cell proliferation, cell survival, and migration, all of which contribute to tumor development and advancement. One protein that is thought to contribute to progressive tumor growth in mammary cells is epiregulin. Epiregulin is a 46- amino acid protein belonging to the Epidermal Growth Factor family of peptide hormones. The network of EGF hormones and related receptors regulate proliferation, differentiation and function of a variety of tissues within the body. Failure to regulate the network's signaling is contributed to development of different malignancies that include bladder, stomach, colon, breast, lung, head and neck, and liver cancers. This study was conducted to determine the effect of epiregulin on the growth and apoptotic rate of the MCF10A mammary epithelial cell line. Findings suggest that epiregulin may enhance the growth of MCF10A cells while also preventing cells from undergoing apoptosis.

Insights into Writing in APA Style

Caitlin Miller*

University of Wisconsin-Eau Claire

Faculty Mentor: Dr. Blaine Peden

Presentation Type: Oral Presentation

Presentation Location and Time: School of Nursing Room 104, 12:20pm

ABSTRACT:

Referencing and documenting scholarly works is a key component distinguishing academic writing from everyday writing. This presentation focuses on APA style as an exemplar because APA style is used by a variety of professions/disciplines, such as Psychology, Sociology, Nursing, Business, Communications, Criminology, and Linguistics. Often instructors struggle to teach and students struggle to master APA style (Landrum, 2013). One potential reason students struggle to master APA style is that instructors forget how complex the intricacies of the style can be, thus misunderstanding the students' struggle to learn (Madigan, Johnson & Linton, 1995). The literature regarding citations is abundant. A majority of these studies explore how to properly write and format in APA style. In other words, the current body of literature focuses on how to cite, largely ignoring why to cite. Today, I will discuss the narrower topic of the difficulty of teaching and learning APA style formatting for writing and referencing. The broader goal of the current research is to learn more about Psychology students' knowledge, skills, and values related to the reference format of APA style. I believe that insights into this narrower topic will illuminate the challenges of the broader issue (i.e. the why to cite). These insights may suggest remedies to the difficulties of teaching and learning APA and other rhetorical styles.

Permutation Statistics in the Hyperoctahedral Group

Rita Post**, *Ryan Stodola**, *Jingtai Liu*
University of Wisconsin-Eau Claire

Faculty Mentor: Aba Mbirika

Presentation Type: Oral Presentation

Presentation Location and Time: Reinhart Center Room 130, 12:40pm

ABSTRACT:

We study a variety of permutation statistics in the hyperoctahedral group $G(2,1,n)$, including the involutory elements and their corresponding conjugacy classes. Also, by analyzing the cycle structures of positively and negatively signed cycles of varying lengths, we present formulas for calculating the sizes of each involutory conjugacy class and for calculating the number of involutory conjugacy classes in $G(2,1,n)$ for all n values. In particular we explore some combinatorial aspects of the analogue of the alternating subgroup contained in $G(2,1,n)$ --namely, the orientation-preserving symmetries, which we denote $A(2,1,n)$.

Antigen specificity in symbiotic microbe-immune interactions

Tori Voight*

Viterbo University

Faculty Mentor: Dr. Christopher Mayne

Presentation Type: Oral Presentation

Presentation Location and Time: Reinhart Center Room 201, 1pm

ABSTRACT:

The intestinal microbiota is comprised of trillions of bacteria consisting of hundreds to thousands of species. The microbiota is responsible for the regulation of the immune system and also aids in digestion as well as the synthesis of numerous vitamins. Therefore, it is important for the host immune system to regulate and prevent inflammatory responses against these beneficial microbes. Among the numerous immunological regulatory mechanisms, T lymphocytes are the most important in balancing immunological tolerance versus inflammation. T cells work by signaling the proper immune response after interacting with an antigen presenting cell (APC). If a T cell is able to recognize an antigen that is specific to it, it will produce IL-2 and cause T cells to proliferate to expand the host's immune response. Our previous research concluded that the CH27 B cell line presents hemoglobin (64-76) peptide to 3.L2 T cells resulting in the production of IL-2 and that concentration of hemoglobin is directly correlated to the concentration of IL-2. However, though CH27 B cells successfully present peptide antigen, they were unable to present whole proteins tagged with this antigen. Our most recent research investigated a different APC, the dendritic cell line tsDC, which we hypothesized would be better at presenting the hemoglobin tagged protein to the 3.L2 T cells. A capture ELISA technique was performed to investigate whether or not recognition occurred and to measure the amounts of IL-2 present. Preliminary results suggest tsDCs were not successful in presenting hemoglobin tagged peptide to 3.L2 T cells. However, additional trials are needed to support this conclusion. In the future we hope to expand this system to determine if T cells could recognize an antigen that is associated with the symbiotic microbe, *Enterococcus faecalis*. These studies could increase understanding of how the immune system regulates the microbiota.

An Analysis on Daily Activities and Their Associations of the Chinese Elderly

Michelle Wagner* and Yixuan Zhao*

University of Wisconsin-Eau Claire and University of Wisconsin-Madison

Faculty Mentor: Dr. Jianjun Ji

Presentation Type: Oral Presentation

Presentation Location and Time: School of Nursing Room 104, 1pm

ABSTRACT:

Using data from a national survey conducted by the China Research Gender on Aging (CRCA) in 2006, this study seeks to examine the relationship between the ability of the Chinese elderly to perform the activities of daily living (ADL) including, cooking, eating, walking, toileting, getting-in and getting-out of bed, bathing and dressing independently in regards to their demographic location, gender, socioeconomic status and other psychological factors. By utilizing cross-classification and the Chi-square significance test, the findings show support for the main hypothesis. Issues concerning the elderly and policy repercussions are discussed.

The exercise duration needed to gain cognitive and emotional benefits, when does it become most evident?

Christina Weldai*

Saint Mary's University of Minnesota

Faculty Mentor: Dr. Molly O'Connor

Presentation Type: Oral Presentation

Presentation Location and Time: School of Nursing Room 104, 12noon

ABSTRACT:

Effects of exercise on the human body have been examined in various ways. This study focuses on the effects of exercise on mood and cognitive abilities. Thirty participants (23 female, and 7 male) complete the in-person portion, with fourteen in the control group and sixteen in the exercise group. The control group were instructed to sit in silence for 20 minutes, while the exercise group either biked or ran for the same period of time. Both groups completed a mood scale at the beginning, after 10 minutes, and at the end. Along with this, to assess cognitive ability, a math task was given at the beginning and the end. A significant decrease in the time taken to complete the math task was found from time 1 to time 2 for the exercise group ($F(1, 15) = 20.388, p = .000$), while the control group's times remained stable ($F(1, 13) = .002, p = .968$). In terms of mood, there was a significant increase in positive mood ($F(2, 30) = 8.871, p = .018$), and a significant decrease in negative mood ($F(2, 30) = 10.216, p < .01$), for those in the exercise group; this was from the first time participants took the mood scale to the third time. In conclusion, exercise appears to positively influence mood and cognitive abilities, even after a 10-minute workout.

Expression of Hepatic Acetyl-CoA Carboxylase (ACACA) in Mice (*Mus musculus*) exposed in utero to atrazine

Acacia Wimmer**, *Raelynn Speltz*, *Jeremy Heinle
Saint Mary's University of Minnesota

Faculty Mentor: Debra Martin

Presentation Type: Oral Presentation

Presentation Location and Time: Reinhart Center Room 201, 12:40pm

ABSTRACT:

Widely used in the Midwest, atrazine is an herbicide that has contaminated water sources to levels above the EPA safe level of 3 ppb in drinking water. A study with chronic exposure of adult mice to 100 $\mu\text{g}/\text{kg}/\text{day}$ of atrazine for 20 days showed increased serum-free fatty acid levels and increased hepatic lipid accumulation suggesting that exposure to atrazine has the potential to cause metabolic dysregulation, in particular fatty acid metabolism (Jin et al, 2014). The committed step to fatty acid synthesis is acetyl-CoA carboxylase (ACACA). To investigate atrazine's effect on this enzyme's protein level, *Mus musculus* exposed in utero was studied. Mice were exposed during gestation and their livers were extracted within 24-48 hours after birth. Liver protein concentrations were determined followed by an Immunoblot to determine the amount of ACACA protein expression. Using a one-way ANOVA, it was determined there was significant increase ($p < 0.05$) between the control group and the 3 ppb group ($p = 0.000$), a decrease between the 3 ppb group and the 30 ppb group ($p = 0.000$), but no significance between the control group and the 30 ppb group ($p = 0.523$). This suggests atrazine exposure does not follow a dose-dependent pattern when considering its effects on ACACA.

Preliminary Study on Soil Richness and Diversity of Invertebrates in Three Different Habitats

*Jessica Wisniewski**

Winona State University

Faculty Mentor: Dr. Bruno Borsari

Presentation Type: Oral Presentation

Presentation Location and Time: Reinhart Center Room 127, 12:40pm

ABSTRACT:

Invasive buckthorn (*Rhamnus cathartica*) is growing aggressively across the Midwest bluff region. This study aimed at investigating whether the growth of buckthorn was affecting richness and diversity of soil-dwelling organisms. Soil samples (n=6) were collected from Garvin Heights in Winona, MN once a month from May to September in three different habitats (prairie, buckthorn savannah, and lawn). Two soil samples from each of these habitats were collected to a depth of about 10 cm. with a garden trowel. The samples were placed in a Berlese apparatus for 24 hours and from these, the soil invertebrates were counted and identified. Data analysis considered the counts of the four richest taxa (mites, ants, springtails and oribatid mites) and employed the Kruskal-Wallis test separately. The Kruskal-Wallis test indicated that a larger number of mites, springtails, and oribatid mites were most common at the lawn site ($p < 0.05$). The lawn site carried more oribatid mites than either one of the other two study sites ($p = 0.0331$). These results were not statistically significant to ascertain that buckthorn growth affects richness and diversity of soil invertebrates at Garvin Heights, although it was discovered that the lawn carried more oribatid mites than the prairie and savannah. In future studies, more samples for each landscape unit could be collected to enhance the significance of the results. The abundance of mites found in the lawn, especially oribatid mites, was unexpected and this could be related to a difference in soil ion composition as well as a difference in microbes available to sustain their natural feeding habits.

Complexities of genocide: A historical analysis

Melanie Brothers*, Zeinab Aden*, and Rachel Romnek*
University of St. Thomas

Faculty Mentor: Dr. Jean Giebenhain

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Room 195, Poster #44, 2-3pm

ABSTRACT:

Looking back on the uglier parts of our world's history is difficult, but necessary. It is easy to blame one person for the tragedies that result from extreme events such as ethnic cleansing, but looking at the system as a whole can point to the real imperfections. Using a historical, qualitative research approach, based on grounded theory, we examined possible causes and effects of genocide as found within the psychological and sociological professional literature. Search terms included: "genocide," "effects of genocide," "mental illness," "wartime," and "children of genocide survivors." Only empirical, peer-reviewed articles were used for data collection, as well as applicable books. We extracted relevant quotes which we organized in theme journals. Themes were determined via consensus. Major themes that emerged throughout from our data included: presence of war as a contributor to genocide, genocide as an international crime, and severe mental health problems and corruption as a potential factor leading to genocide. Our results are discussed in light of historical context. This research can help society understand causes and effects of genocide in order to prevent further atrocities.

Use or Reuse: How do university students consume liquids on campus?

Saudamini Agarwal* and Samantha Storzer*
University of Wisconsin-Eau Claire

Faculty Mentor: Dr. Blaine Peden

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Room 195, Poster #38, 2-3pm

ABSTRACT:

We explored University of Wisconsin-Eau Claire students' response to recommended sustainability processes. One recommendation is reuse and recycle. Our poster presents a naturalistic observation study that examines the relationship of liquid consumption by students. Our variables were gender, type of bottle used for liquid consumption, and source (filling station or vending machine). These variables were observed at two campus locations. The results show us that males and females alike are using reusable water bottles to fill significantly more than they are purchasing disposable bottles. This study provides an incentive for future research in sustainability and of those practicing it. The results suggest continuing to fund sustainable efforts and practices on campus.

Analyzing the Binding Relationship of Curcuminoids to Human Serum Albumin Using Steady State Fluorescence

Matthew Amann**, *Grant Myres*, *Megan Roozeboom
Luther College

Faculty Mentor: Olga Michels

Presentation Type: Poster Presentation

Presentation Location and Time: Reinhart Center Boardroom, Poster #2, 2-3pm

ABSTRACT:

Curcuminoids are a class of photoactive organic compounds found to have practical application in Photodynamic Drug Therapy (PDT). To understand the practicality of a given curcuminoid in PDT, the binding relationship to the protein Human Serum Albumin (HSA) at physiological pH 7.4 must be identified. This parameter can be analyzed through a variety of photophysical studies. In particular, quenching studies and Stern-Volmer plots provide insight to the K_{sv} value and the determination of the k_b value (binding constant). Another parameter of interest is the number of binding sites between a given curcuminoid and HSA. This can be found by analyzing the relationship between fluorescence intensities and curcuminoid concentrations. Alternate methods of analysis include Benesi-Hildebrand plots and the identification of thermodynamic parameters. Data obtained thus far indicates that there is consistently one binding site for all curcuminoids within HSA. Further analysis will provide more concrete information pertaining to the overall binding coefficients and stoichiometric relationships.

Familiarization with the FSPA's Organic Garden Processes through Research on the Highest Producing Tomato Plant Varieties

Tamara Anderson
Viterbo University

Faculty Mentor: Sr. Lucy Slinger, FSPA

Presentation Type: Poster Presentation

Presentation Location and Time: Fine Arts Center Main Theatre Lobby, Poster #24, 2-3pm

ABSTRACT:

The FSPA's (Franciscan Sisters of Perpetual Adoration) organic garden on St. Joseph's ridge grows food using different techniques to increase the yield each year. The food is transported to the convents to supplement the food supply for the sisters. There are a plethora of different varieties of vegetables and fruits that can be planted. Some varieties are more resistant to disease, weather, and insects that others fall victim to. Identifying which plants produce the most fruit or vegetables is incredibly important in producing the most out of a given portion of the garden. I sought to identify, out of seven tomatoes varieties, which produced the most pounds. I also documented which varieties resisted disease and weather elements the best. To begin, I planted seven different varieties of tomatoes in the same area of the garden. There were four plants of each variety. After each harvest, the pounds for each variety were recorded along with a rating for each tomato. If the tomato was designated as a "1," the tomato had very few blemishes or signs of disease. If the tomato was designated as a "2," the tomato may have had blemishes or signs of disease on the skin. In this case, the tomato was either thrown out or blanched if only the skin was damaged. My initial hypothesis was that the heirloom varieties would produce the most pounds. Although my hypothesis was somewhat confirmed, one hybrid variety called Better Boy, was among the top three for most pounds produced. As a result of the experiment, I learned useful organic practices to care for the plants, like using a baking soda and water mixture to prevent the spread of common fungal diseases. This experiment was a success because we were able to see a significant difference in pounds while comparing all seven varieties. The comparison will further help us increase our yields and make more food available to the convent. As a student new to research practices, this opportunity also helped me gain a better understanding of how research is performed, documented, and presented.

Using LiDAR to Identify Historic Features in the Superior National Forest

Andrew Anklam

University of Wisconsin-La Crosse

Faculty Mentor: Dr. Constance M. Arzigian

Presentation Type: Poster Presentation

Presentation Location and Time: Fine Arts Center Main Theatre Lobby, Poster #21, 3-4pm

ABSTRACT:

LiDAR is a relatively new remote sensing tool used by archaeologists to remotely observe surface features. Archaeologists in the northeastern United States have successfully used LiDAR to identify previously unmapped historic features (Johnson and Ouimet 2013). There has been little to no work done to see if LiDAR can identify historic features in the boreal forest of the northcentral United States or the interior of Canada. With the advent of Minnesota's LiDAR survey, there are now opportunities for archaeologists to use LiDAR in northern Minnesota's heavily wooded boreal forest as a way to check an area of interest before heading into the field to do reconnaissance. In 2015 the author used LiDAR as a tool to identify derelict rail roads in boreal forests. This poster is a continuation of that project in conjunction with the Superior National Forest looking at different types of cultural resources as examples for how LiDAR can be used for archaeology in boreal forests.

A Comparison of Social Management within Education: The 1920's vs 1960's

Benjamin Bassier*, Stephanie Peters*, Cortez Tillman*
University of St. Thomas

Faculty Mentor: Dr. Jean Giebenhain

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Room 195, Poster #36, 2-3pm

ABSTRACT:

How schools should be reformed has been an ongoing issue of debate, but how much have schools really changed? The purpose of our study is to investigate the history of education reform during two distinctive time periods when this topic dominated popular conversation: the 1920's and the 1960's. We used a research method based in grounded theory to explore the history of the issue from a qualitative perspective. We used search terms such as, "failed school reforms," "standardized tests," "child centered curriculum," "Kenneth Clark," and "John Dewey" when searching our primary sources. We searched psychological journal archives, such as archive.org, Center for the History of Psychology, Archives of the History of American Psychology, JSTOR, ProQuest and literary works on the history of school reforms. During our research, notable quotes from contemporary professional figures were extracted, and used as the basis for our findings. Overarching themes of the two time periods were determined collectively, and we identified social management as an influential factor in both decades. Results were discussed in light of historical context, School reform continues to cause heated debate, and in order to avoid repeating past mistakes it is important to consider what has already been done before creating a new path.

Plant host and geospatial effects on diversity of leaf-associated fungi in a tropical island ecosystem

Amanda Bradley* and Matteo Garbelotto
University of Wisconsin-La Crosse

Faculty Mentor: Todd Osmundson

Presentation Type: Poster Presentation

Presentation Location and Time: Reinhart Center Boardroom, Poster #14, 2-3pm

ABSTRACT:

Estimating Earth's biodiversity is a difficult task, considering the many challenges that come with conducting exhaustive surveys of organisms worldwide. Fungal biodiversity estimates often rely on extrapolations from limited amounts of data on plant : fungal richness ratios. Understanding what factors influence the association between plant and fungal diversity is therefore a key component to making more accurate estimates of fungal diversity. We characterized the diversity of leaf-associated fungi on the island of Moorea, French Polynesia across host species and geographic distance by sampling leaf material from every plant located within sampling plots situated throughout the island. Fungal communities were characterized using analyses of Illumina sequence libraries, with plant species confirmed using rbcL DNA barcodes. Geographic location appears to be a better indicator than host plant identity for fungal community structure. However, within a host species, samples do not cluster entirely by location; therefore, fungal community structure appears to be a function of the interaction between host and location.

Lipid Panel and Fasting Blood Glucose Analysis of Individuals with Pre-Diabetes

Rebecca Brannan**, *Samuel McCormick**, *Grace Huebner**, *Dana Swope*
Viterbo University

Faculty Mentors: Dr. Maria Morgan-Bathke and Dr. Karen Gibson

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Foyer, Poster #55, 3-4pm

ABSTRACT:

According to the American Diabetes Association, about 9.3%, or approximately 29.1 million Americans have Diabetes Mellitus, and about 90% of the cases are Type II. It is projected that there are roughly 1.4 million new cases of diabetes each year. Previous research trials have suggested that MUFAs found in pecans have been beneficial in improving insulin sensitivity and therefore halting the progression to diabetes in individuals with pre-diabetes. Our research purpose was to determine if the monounsaturated fats (MUFAs) found in pecans help improve insulin resistance in individuals with pre-diabetes.

Diabetes Education for Better Self-Management

Rebecca Brannan*
Viterbo University

Faculty Mentor: Jamie Weber

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Foyer, Poster #53, 3-4pm

ABSTRACT:

Diabetes rates are on the rise, and according to the American Diabetes Association, more than 21 million residence in the United States has been diagnosed with Diabetes, and more than 8 million have gone undiagnosed. To help raise awareness of these shocking statistics and offer education at a more approachable basis, my research looked at the prevalence of Diabetes in a local community and specifically the prevalence at a Food Shelf. Then the goal was to design and Provide Diabetes Education for the clients at a Food Shelf to help with understanding and better self-management of Type II Diabetes Mellitus.

Perceptions of Women's Mental Illness in a Changing Social Context

Erin Brine-Doyle*, Megan Vaughan*, Julie Plutt*
University of St. Thomas

Faculty Mentor: Dr. Jean Giebenhain

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Room 195, Poster #42, 2-3pm

ABSTRACT:

During the last century, women in America have worked to achieve equal legal and social status with their male counterparts. Women afflicted with mental illness have struggled similarly to obtain objective diagnoses and societal empathy. Despite the fact that women's voices have not always been heard by the mainstream population, the agency of women writers and their ability to express themselves through writing is evidenced throughout history. Beginning with the start of the suffrage movement in the 19th century, to the passage of the 19th Amendment in 1920, and a push for equal rights outside the home after WWII, this qualitative study uses content analysis, based on grounded theory, to identify historical themes within the literary works and letters written between 1890 and 1963 by prominent women writers and artists who experienced maladies which were, at the time, considered mental illnesses. We identified names of individual women by conducting internet searches using terms such as "women" and "writers" in conjunction with particular disorders like "depression," "hysteria," and "neurasthenia," and used this information to locate their published writings. To complement these materials, we also searched archival databases by using the names of prominent male physicians who "specialized" in women's psychiatric ailments. This yielded writings of dominant (male) psychiatrists who were treating women at the time, such as S. Weir Mitchell. We extracted significant quotes from these documents and used these to identify themes in our data for each of three decades: the 1890s, the 1920s, and the 1950s. Our results are discussed in light of historical context. This research is important because, although in recent years women's mental health has become objectively diagnosed in comparison to that of their male counterparts, there is still ample work to be done in eliminating the stigma which continues to surround women's mental illness.

The Moduli Space of Complex 2 | 3-dimensional Associative Algebras

Lucas Buchanan**, *Ai Lie Ching**, *Chris Magyar**, *Haotian Wu*
University of Wisconsin-Eau Claire

Faculty Mentor: Michael Penkava

Presentation Type: Poster Presentation

Presentation Location and Time: Reinhart Center Boardroom, Poster #4, 2-3pm

ABSTRACT:

We have been studying moduli spaces of complex associative algebras on various \mathbb{Z}_2 -graded vector spaces. A moduli space of algebras consists of equivalence classes of isomorphic algebras, and a \mathbb{Z} -graded space has a decomposition into a direct sum of two subspaces, one called the even elements and the other the odd ones. There are 313 algebras in the space, of which 18 are families depending on a projective parameter. We have also studied how the algebras deform, and have classified them according to their deformation theory.

Improper Disposal Methods of Hypodermic Needles and Medication in La Crosse Neighborhoods

Samantha Clark*, Tori Hansen*, Mercedes Stark*
Viterbo University

Faculty Mentor: Janet Holter

Presentation Type: Poster Presentation

Presentation Location and Time: Fine Arts Center Main Theatre Lobby, Poster #29, 3-4pm

ABSTRACT:

This Photovoice work is focused on the improper disposal of medications and hypodermic needles in the La Crosse area. There has been a substantial amount of used hypodermic needles found within the community due to the Heroin epidemic, posing danger to residents. Last year, firefighters responded to 225 calls to pick up needles in La Crosse neighborhoods. Many of these pick-ups involved more than one needle (O'Brien, 2016). In addition, there are recent concerns about the proper disposal of over-the-counter and prescription medications. Many people still believe that it is appropriate to dump medications down the toilet or dispose of medications in the trash. These are no longer acceptable ways of disposing of medication and that there are new and proper disposal programs available through many resources within the community. The goal of these photographs is to help bring awareness to these issues.

Spirituality, Parental Support and their Effects Upon Well-being and Flourishment

Ben Coady*

Winona State University

Faculty Mentor: Dr. Carrie Fried

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Room 195, Poster #48, 2-3pm

ABSTRACT:

The transition many teens go through when leaving the house for the first time is undeniable. The pressure of being on your own, making your own decisions, and providing for yourself add stress and tension to everyday life. Students are faced with conflicts regarding their childhood spirituality and newly acquired freedom. Students may begin to question many of the beliefs they took for granted as a child. This questioning leads to added stress and internal conflict within these already struggling students. The study at hand aims to evaluate the amount of students who are shifting their childhood beliefs and beginning to question and develop personal faith for themselves. This research also will look to back up previous studies that correlate spirituality with an overall higher well-being. Parental support, and spirituality in combination are studied in accordance with well-being and life flourishing. Subjects filled out three brief questionnaires which were used to score their well-being, flourishing, and spirituality. They also were asked to sort themselves into a spirituality category based upon faith change, having no faith, or a continued childhood faith. Finally a question regarding parental support and spirituality change was presented. These variables have long term implications since results show that faith in something and parental support lead to an increase in well-being and flourishing.

Shifts in antimicrobial gene expression in mouse model of self-antigen driven inflammatory bowel disease

Ryan Cook
Viterbo University

Faculty Mentor: Dr. Christopher Mayne

Presentation Type: Poster Presentation

Presentation Location and Time: Fine Arts Center Main Theatre Lobby, Poster #22, 2-3pm

ABSTRACT:

Inflammatory bowel diseases (IBD), such as Crohn's disease and ulcerative colitis, are inflammatory conditions affecting the gastrointestinal tract. One cause of IBD is the failure to tolerate intestinal antigens. In this study, we investigated whether self-directed autoimmune responses lead to changes in the expression of antimicrobial genes in the small intestine. Such changes could lead to alterations in the host-microbe interaction, worsening disease. Sections of distal small intestine from a mouse model of IBD were provided from the Medical College of Wisconsin. These biopsies were homogenized and RNA was purified and quantitated prior to reverse transcription of these RNA samples to cDNA. Gene expression from these samples was quantified through RT-qPCR using a Realplex instrument and agarose gel electrophoresis and expression was compared between mice with and without IBD. Our results show that the IBD-prone genotype of mice appears to express the antimicrobial genes *Crypt1* at a lower level and *mLYS* at an increased level compared to controls. However, due to this being early in this project the sample size is rather small. Therefore, future work will focus on increasing numbers of mice analyzed in the experimental and control groups and I am currently continuing my research with new samples from the Medical College of Wisconsin. Once these samples have been analyzed, the increased sample size should allow for more statistically supported conclusions to be made about changes in gene expression in response to inflammation in IBD.

The Spread of Manspreading

Nensi Xhunga* and Lane Coulter*
University of Wisconsin-Eau Claire

Faculty Mentor: Dr. Blaine Peden

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Room 195, Poster #45, 3-4pm

ABSTRACT:

The Oxford Dictionary added the word “manspreading” to its dictionary in 2015. This study intends to investigate the validity of the neologism manspreading by determining its incidence on Eau Claire public transport. Researchers observed the sitting position of 57 males on four bus routes to determine if they partook in manspreading behavior, and if there was any association between their location, age, and manspreading. Manspreading is operationally defined as sitting in a position with legs spread wide enough apart to encroach on adjacent seat. Participants consisted of males between the ages of 18 and 75 riding on the Water Street, Stein Boulevard, Putnam Heights, and West McArthur bus routes. Data analysis revealed that males between the ages of 19 and 47 partook in manspreading behavior most often, and males over age 48 partook in the behavior least. These data indicated a small effect size, with Cramer’s $V = .15$. These results suggest that generally, younger males on college routes partake in manspreading behavior more frequently than older males on city routes. Future research studies include exploring the motivation behind manspreading as well as physical acts or personality characteristics associated with manspreading.

Methylmercury Contamination in the Lower Food Web of At-Risk Minnesota Rivers

Phoenix Rogers**, *Marissa Despins**, *Khadel Akindolire-King*
University of Wisconsin-La Crosse

Faculty Mentor: Kristofer Rolfhus

Presentation Type: Poster Presentation

Presentation Location and Time: Fine Arts Center Main Theatre Lobby, Poster #19, 3-4pm

ABSTRACT:

Methylmercury (MeHg) is a potent and bioaccumulating neurotoxin for both humans and wildlife, with most exposure through the consumption of fish. The Minnesota Pollution Control Agency has recently identified five Minnesota rivers (Kettle, St. Louis, Roseau, Thief, and Vermillion) that exhibit exceptionally high fish mercury levels. We are investigating the lower food webs of these "High-5" rivers relative to a low fish-Hg control (Mustinka River), to test the hypothesis that aqueous MeHg concentrations are controlling bioaccumulation into higher trophic positions (benthic invertebrates, small fish, and predatory fish). Here we report our findings for 0.45- μ m filtered water, seston (suspended particles), and periphyton (attached algae) for the High-5 rivers and Mustinka River compared to regional western Great Lakes averages. Rivers were characterized by sampling locations along the main stem and main sub-watershed tributary inflows between May 2015-June 2016. River-averaged MeHg levels in filtered water ranged between 0.13-0.65 ng/L (mean \pm SE: 0.34 \pm 0.06 ng/L) for the High-5 rivers, compared to the Mustinka control (0.076 ng/L) and the regional average (0.065 ng/L). Each of the High-5 rivers were indeed statistically higher in MeHg concentration than the regional and Mustinka averages (ANOVA, $p < 0.05$), while the Mustinka control did not differ from the regional average. Methylmercury in seston ranged between 1.2-3.3 ng/g (mean 2.2 \pm 0.3 ng/g) in the High-5 rivers, compared to the Mustinka River (0.6 ng/g) and the regional average (1.2 ng/g). For periphyton, the High-5 rivers ranged from 1.7-12 ng/g (mean 6.2 \pm 1.5 ng/g), relative to the Mustinka (5.0 ng/g) and the regional average (2.4 ng/g). The High-5 rivers were not statistically different in MeHg content compared to the regional values for seston and periphyton. Our results suggest that elevated aqueous MeHg levels (and the physical/chemical factors that produce MeHg) do exhibit control on bioaccumulation in riverine systems where high fish-Hg is observed.

A Historical View of Solitary Confinement

Timothy Kohlmann**, *Shelby Doherty**, *Kristina Bridger*
University of St. Thomas

Faculty Mentor: Dr. Jean Giebenhain

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Room 195, Poster #32, 2-3pm

ABSTRACT:

Could you handle being locked up alone in a cell for extended periods of time? Solitary confinement, defined as a prisoner being isolated from other prisoners as a form of punishment or for the safety of the prisoner, was created in 1829 (Nolo's plain-english law dictionary, 2016). However, problems arose when negative effects emerged from prisoners being alone in a cell for long periods of time. The purpose of our study is to analyze the history of solitary confinement. This study takes a qualitative approach, using content analysis, based on grounded theory, to identify historical themes, related to solitary confinement, within professional psychological and sociological journal articles, books, and newspaper articles. We used search terms including "solitary confinement" and "Eastern State Penitentiary" (first prison recognized as using solitary confinement) in our search to identify relevant sources. The time period of our research includes the 1800s through mid-1900s. We extracted significant quotes from relevant historical content until saturation was reached. A theme journal was used to organize all data. We individually identified common themes that emerged from the data and agreed upon final themes by consensus. The themes that emerged from our investigation include: the treatment within solitary confinement, the effects of solitary confinement on the prisoner, and arguments in favor for and against solitary confinement. Our results are discussed in light of historical context. Because solitary confinement is still actively used in prisons today, it is particularly interesting to investigate the history of this practice in order to influence the future of solitary confinement.

Impact of Revitalization on La Crosse Neighborhood Environments

Janelle Earle**, *Abby Hines**, *Mollie Huepfel*
Viterbo University

Faculty Mentor: Janet Holter

Presentation Type: Poster Presentation

Presentation Location and Time: Fine Arts Center Main Theatre Lobby, Poster #28, 2-3pm

ABSTRACT:

Does changing neighborhoods change lives? La Crosse County began a project to address the declining enrollment within the La Crosse School District and the mobilization from urban settings to suburb settings. To reverse this trend, neighborhood revitalization began in the Powell-Poage-Hamilton and Washburn neighborhoods. The La Crosse Promise organization was created to address and encourage residential growth through educational incentives. Through this housing project, the City of La Crosse hopes to build a natural desire for people to live within the center of the community. This Photovoice project serves as an awareness tool to show the benefits and risks of this revitalization project.

Effects of Endomycorrhizal Inoculant on Garlic Performance at the FSPA Organic Garden

Janelle Earle*

Viterbo University

Faculty Mentor: Sr. Lucy Slinger, FSPA

Presentation Type: Poster Presentation

Presentation Location and Time: Fine Arts Center Main Theatre Lobby, Poster #25, 3-4pm

ABSTRACT:

As an intern at the FSPA garden, I researched garlic's response to endomycorrhizal inoculant to determine whether it would alleviate the effects of growing garlic in the heavy clay soil (which make nutrient uptake difficult) of the garden. The goal was to document comparative growth and yields of two beds of garlic, one inoculated and the other non-inoculated (control) to determine the value of using mycorrhizal inoculant on garlic. Hypothesis: Garlic grown with mycorrhizal inoculant will be more vigorous and produce higher yields than garlic grown without inoculant.

Examining Satisfaction and Gratitude in Married Couples

Sydney Eckert*

Viterbo University

Faculty Mentor: Stephanie Thorson-Olesen

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Room 195, Poster #47, 3-4pm

ABSTRACT:

Although a great deal of research on marriages focuses on the reason for dissolution, it is also important to study marriages that stay together. Marital satisfaction and dissatisfaction have emotional and physical implications. Research demonstrated that individuals in unsatisfactory marriages report greater levels of physical and mental health problems compared to those who find marriage satisfactory (Levenson et al., 1993). Congruently, satisfied couples reported being in better physical and psychological health than dissatisfied couples. Marital satisfaction is characterized as the subjective evaluation of an individual's marriage. While different factors contribute to positive evaluations, Lambert and Fincham (2011) found a causal relationship between expression of gratitude and positive partner perception. As a result, the purpose of the proposed research is to explore marriage satisfaction in relation to gratitude.

Participants were recruited using convenience sampling utilizing the internet and social media advertisements. Participants were directed to an online survey which included the informed consent, demographic questionnaire, and the Couples Satisfaction Index (CSI) to measure relationship satisfaction (Funk & Rogge, 2007), and the Gratitude, Resentment and Appreciation Test (GRAT) to measure dispositional gratitude (Watkins, Woodward, Stone & Kolts, 2003). The study used a quantitative correlational survey research design.

Corresponding with prior research and confirming the hypothesis, the correlation between marriage satisfaction and gratitude was significant. Further, the relationship was positively correlated. With half of marriages in the United States ending in divorce, there is an immediate need for research examining factors that promote long-term, healthy marriages. The knowledge that increased gratitude within a marriage correlates with increased marriage satisfaction, therapists should look to incorporate therapeutic exercises designed to foster gratitude within a marriage.

Designing an efficient and selective DNA detection cycle using catalytic G-quadruplex production

Dominic Egizi*
Edgewood College

Faculty Mentor: Peter Kuhn

Presentation Type: Poster Presentation

Presentation Location and Time: Reinhart Center Boardroom, Poster #11, 3-4pm

ABSTRACT:

G-quadruplexes are defined as 3-dimensional formations resulting from hydrogen bonding between successive groups of guanine base pairs. This is termed Hoogsteen base pair bonding. Strand displacement reactions are the most common way to assemble a g-quadruplex from a starting structure such as a hairpin formation. Our goal in this project is to improve upon an established method of using G-quadruplexes as DNAzymes to identify a specific DNA sequence through an oxidation-reaction resulting in a luminescent ABTS radical. The traditional method of g-quadruplex-assisted DNA detection redox cycles relies on a 1:1 ratio of DNA and pre-G-quadruplex hairpins to function effectively. We propose to use the desired DNA target as a catalyst in the g-quad formation as to increase the response factor of the reaction above that of a 1:1 ratio. Our target species from which this cycle will be designed are two species of woody vines. *Celastrus orbiculatus* (oriental bittersweet) and *Celastrus scandens* (American bittersweet) are both common in northern Wisconsin as well as much of the northern US. Oriental Bittersweet is considered an invasive species while American Bittersweet is native to the region. These plants are very close in their morphology, leading to their only identifying feature being the axis on which their fruit grow during spring. Because of the limitations evident in this time-restricted identification method, developing an accessible and precise DNA detection method, which can be adapted depending on which species you would like to analyze, would be a great advantage in controlling the populations of this genus.

Determination of DNA Binding Interactions for Individual Constructs of the PICKLE Protein's DNA Binding Domain in *A. thaliana*

Kyle Erzen*

Viterbo University

Faculty Mentors: Dr. Joseph Ogas and Kwok Ki Ho

Presentation Type: Poster Presentation

Presentation Location and Time: Reinhart Center Boardroom, Poster #5, 3-4pm

ABSTRACT:

The PICKLE (PKL) protein is an ATP-dependent chromatin remodeler from *Arabidopsis thaliana* that is a member of the subfamily II of CHD remodelers. The PKL protein is of interest because it is necessary for epigenetic regulation of gene expression and plant development. The PKL protein promotes trimethylation of H3K27, which is a repressive epigenetic mark [1]. Due to the important roles that PKL plays in gene expression and plant development, it is of interest to understand this protein's DNA binding domain as it may help determine how this protein is targeted [1]. In this project, four constructs of the PKL protein's DNA binding domain were truncated near the C-terminal end: D (52.6kD), C (40.9kD), B (31.8kD), and A (18.5kD). The main objective of this study was to express these recombinant proteins in *E. coli*, purify these four truncated constructs, and examine the ability of these proteins to bind DNA. Purity of the proteins were measured with Bradford assays and SDS Page gels. Each protein's DNA binding capabilities were determined by electrophoretic mobility shift assays. We report that purified constructs D and B were able to interact with several different lengths and types of DNA. This data strongly indicates that the PKL protein's truncated DNA binding domain can bind to DNA with nonsequence specificity.

It's a Beautiful Day in the Neighborhood: Leveraging Community Assets and Anchor Institutions in South La Crosse

Patricia Esparza*, Chantel Schulze*, Elizabeth Knothe*
Viterbo University

Faculty Mentors: Matthew Bersagel-Braley & Pamela Dizon

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Foyer, Poster #57, 3-4pm

ABSTRACT:

Our research team, the Neighborhood Assets Project set out to examine the surrounding communities of Viterbo—Washburn and Powel-Poage Hamilton. As part of Viterbo University's 5-year strategic plan, our mission was to identify how Viterbo University can become a good neighbor by partnering with local resources in order to aide in community development and identify assets in the community; more specifically, the Powell-Poage Hamilton and Washburn neighborhoods in La Crosse, WI. Viterbo University is considered an anchor institution, an establishment with potential to aide in the growth and community development by leveraging their assets.

To begin, our team conducted "walk arounds" to familiarize ourselves with the location of the neighborhoods. Then, interviews of community members were conducted and transcribed. We simultaneously worked with students at Hamilton Elementary, to gain the perspective of a different demographic. Finally, we brought our results together in the creation of our final assets map, using an interactive software accessible to the public.

Overall, interviewees saw neighborhood associations as an asset because of the associations ability to gather community members and construct initiatives to better their neighborhoods. While interviewing and observing our participants, common themes also occurred that were of concern to these community members. Many were concerned with the disparity of the condition of houses in the Powell-Poage Hamilton and Washburn neighborhoods, as well as the lack of familiarity with neighbors. Although these themes occurred, neighborhood revitalization programs such as La Crosse ReNew were seen to build bonds and raise the housing stock.

Creating an assets map of the Powell-Poage Hamilton and Washburn neighborhoods allows Viterbo to identify what assets the surrounding neighborhoods possess in order to become a partner in community development. The Powell-Poage Hamilton and Washburn neighborhood assets map provides organizations with a resource for building relationships within the community.

Interactions between model peptide antibiotics and lipid vesicles depend on peptide charge distribution and structure

Jake Faultersack**, *Jack Geiger**, *Brianna Haight*
University of Wisconsin-La Crosse

Faculty Mentor: Adrienne Loh

Presentation Type: Poster Presentation

Presentation Location and Time: Reinhart Center Boardroom, Poster #7, 3-4pm

ABSTRACT:

Given the decreasing effectiveness of existing antibiotics, there is an immediate need for new antimicrobials that are less susceptible to the development of drug resistance. One promising avenue lies in positively charged peptide-based molecules, which are generally helical and function as antibiotics by perturbing bacterial membranes. We are investigating the interactions between model membranes and model peptide antibiotics composed primarily of the hydrophobic, branched amino acid Aib (α -aminoisobutyric acid). Antibiotics containing Aib are found in some bacteria, and Aib is known to induce helical structures due to crowding at the α -carbon. We present results here on two octameric peptides; one has two positively charged lysine residues placed in adjacent locations in the center of the helix (KK45), and the other has lysine residues placed a full helical turn apart (KK36). Large unilamellar vesicles (LUVs) composed of DMPG (negatively charged) or DMPC (neutral) are used to model bacterial or human cell membranes, respectively. The interaction between the LUVs and peptides are monitored using Isothermal Titration Calorimetry (ITC) to measure overall binding enthalpies, entropies, and binding constants. Preliminary results indicate that KK45 binds more favorably to DMPG LUVs than KK36. In addition, the binding is largely exothermic for KK45, and endothermic for KK36. The charge distribution and structure of the two peptides is different, suggesting that these are important factors governing peptide/membrane interactions. Results describing binding to DMPC vesicles and mixed DMPG/DMPC vesicles will also be presented.

Efforts Toward the Synthesis of Leucophytalin C

Tristyn Forget*

Viterbo University

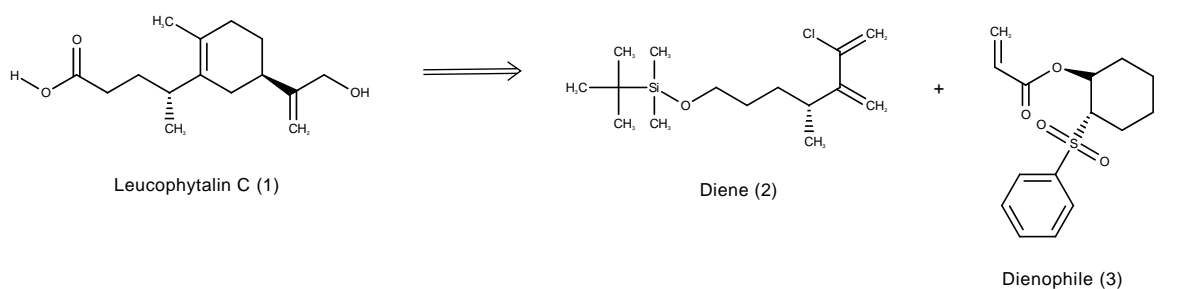
Faculty Mentor: Dr. Tammy Clark

Presentation Type: Poster Presentation

Presentation Location and Time: Reinhart Center Boardroom, Poster #1, 3-4pm

ABSTRACT:

Efforts Toward the Synthesis of Leucophytalin C



Leucophytalin C (1) is a 1,10-Seco-Eudesmanolide that was extracted from the cushion bush plant by Hyldaard, et al. This extract, as well as an analog of Leucophytalin C, exhibit cytostatic activity against the MCF-7 breast cancer cell line. The overall goal is to develop a stereoselective synthesis of Leucophytalin C. The major step in the synthesis will be an enantioselective Diels-Alder reaction between the diene (2) and dienophile (3). Efforts towards their synthesis of the diene portion will be discussed with an emphasis on protection strategies.

“Now it’s, get good grades to get a good job”: A Qualitative Analysis of Motivation to Achieve Academically among Collegiate Athletes

Samantha Lee**, *Grady Friedges**, and *Alex Russell
Winona State University

Faculty Mentors: Amanda M. Brouwer and John C. Johanson

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Room 195, Poster #40, 2-3pm

ABSTRACT:

When in season, athletes have time commitments that limit their ability to perform academically. Motivation for academic achievement varies among collegiate athletes and may be a mechanism to better understand and improve academic success for collegiate athletes. Therefore, to better understand student athletes’ motivations for academic achievement, we interviewed 12 focus groups of male and female athletic teams. Data were analyzed by using Consensual Qualitative Research methodology.

Results demonstrate that although athletes have both external and internal motivations for achieving academic success, the majority identified external reasons. Participants described needing to do well because it was important for future career or program success. Others expressed that supportive individuals (e.g., coaches, parents) provided motivation to achieve academically. Participants also identified how getting good grades was motivated by self-gratifying reasons, such as avoiding embarrassment in front of other team members and competing with them to do well academically. Although less common, participants’ also described an internal drive to do well, such as taking pride in one’s achievement. Prioritizing athletics over academics, especially when in-season, was also discussed.

Findings demonstrate that motivation for academic achievement differs among athletes, with most identifying external reasons for achieving academically. Additionally, prioritizing academics is challenging for athletes and motivation differed depending on the time of year. Our research suggests that emphasizing future goals (i.e., careers, graduate school), praising those who do well in front of others, and providing individual encouragement for students might be a way to increase motivation for academic achievement. Likewise, creating purpose statements for classes or highlighting students’ interests in classes might additionally promote motivation to achieve.

Moral Triage: Admitting Social Ethics into Nursing Practice

Nicole Fronek*, Jessica Sims*, Tyler Rehnelt*, Marissa Pieper*
Viterbo University

Faculty Mentors: Kathy Warner, MSN, RN and Julie Meyers, MSN, RN

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Foyer, Poster #51, 3-4pm

ABSTRACT:

In this qualitative study, the research team focused on the tension between nurses' awareness of the social determinants of health and their ability as nurses to integrate this awareness into everyday practices of care-giving. Semi-structured interviews were conducted with fifteen nurses practicing within their first five years of their profession. Analysis of interview transcripts reveals a range of social and structural dynamics nurses recognize as relevant to their care giving. The interviews provide insight into how these dynamics inform the nurse's interpretation of social justice as a dimension of ethical nursing practice. In conclusion, the findings of the data analysis suggests that Viterbo University nursing graduates are competent in practicing holistic ethical care for themselves and with their patients.

The Effects of Biogenetic Explanations on Stigmas of Psychological Disorders

*Jennifer Gauerke**

Winona State University

Faculty Mentor: Dr. Carrie Fried

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Room 195, Poster #33, 3-4pm

ABSTRACT:

In recent years, biogenetic explanations for psychological disorders have been on the rise. This is due in part to increased medicalization, the development of advanced diagnostic criteria, and an increase in laypeople's understanding of psychiatric neuroscience. When biogenetic explanations first emerged, it was believed they could potentially reduce the stigma placed on those suffering from psychological disorders. Stigma is a huge roadblock in the path to recovery for mental illnesses. While biogenetic explanations may reduce certain aspects of stigma, research has shown it may also increase others. The present study aimed to examine the effects of biogenetic explanations on stigmas of psychological disorders in a college student population. Participants were randomly assigned to either the biogenetic condition or the psychosocial condition. Then, they were instructed to read three different vignettes describing people with schizophrenia, social phobia, and depression in contexts of their given condition. After each vignette, they completed a survey assessing their stigma towards that person. In line with previous research, results were mixed. The level of stigma based on whether there were biogenetic explanations is less clear. However, it was clear that greater stigma was placed on people suffering from schizophrenia than depression or social phobia. As predicted, the effects of biogenetic explanations on psychological disorders yield mixed results and are disorder-specific.

Examining the need for safe, stable housing in the Powell-Poage-Hamilton Neighborhood

Mallory Gerhmann*, Angela Hoch*, Rachel Brennan*
Viterbo University

Faculty Mentor: Janet Holter

Presentation Type: Poster Presentation

Presentation Location and Time: Fine Arts Center Main Theatre Lobby, Poster #27, 3-4pm

ABSTRACT:

The goal of this Photovoice project is to inform the community on the additional needs for stable, safe housing in the Powell-Poage-Hamilton area. This community project will explore many ideas for neighborhood revitalization as well as address the current problems found in the neighborhood. We are examining the impact of unsafe housing and exploring ways to revitalize the neighborhood of Powell-Poage- Hamilton with safe and stable housing. We will also be exploring areas of growth and identifying needs and neighborhood goals with safety of the neighborhood. Through the creative use of photography this will illustrate residential crowding, housing quality, neighborhood conditions and additional resources for the neighborhood. It is imperative that housing is looked at and enhanced to prevent illnesses and maintain a healthy lifestyle for children. The factors that relate health and housing are explored as well as recommendations for improving health and housing conditions. Overall, our objective is to educate the community on the additional needs of the south side Powell-Poage- Hamilton and create future change through photos.

Serving in South Africa

Danielle Gille*

Viterbo University

Faculty Mentors: Matthew Bersagel Braley, Andrew Hamilton

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Foyer, Poster #60, 2-3pm

ABSTRACT:

North American Christians endeavor to provide relief from poverty in several different ways: soup kitchens, disaster relief, and gifts for children. Viterbo students spent 17 days in South Africa during May 2016, learning through service in various townships. An assessment of the service work and its impact on the local community will describe the potential benefits and drawbacks of service work around the globe.

Celastrus orbiculatus and Celastrus scandens differentiation using G-quadruplexes

Brooke Gillitzer*
Edgewood College

Faculty Mentor: Peter Kuhn

Presentation Type: Poster Presentation

Presentation Location and Time: Reinhart Center Boardroom, Poster #17, 3-4pm

ABSTRACT:

A molecular device is a tool that uses individual molecules as its moving and working parts. One specific type of DNA-based molecular device is called a G-quadruplex, which forms when guanine-rich nucleic acid sequences form a stack of guanine tetrads. The goal of this experiment was to develop a DNA sensor using G-quadruplex enzyme activity to indicate the presence of a species-specific DNA sequence. G-quadruplexes can form a complex with hemin and catalyze reactions in a manner similar to enzymes called peroxidases. These “Dnazymes” can catalyze hydrogen peroxide (H₂O₂) mediated oxidation of 2,2'-azino-bis(3-ethylbenzthiazoline-6-sulphonic acid)(ABTS), resulting in a green color in solution. We are building DNA complexes that are only activated and turning a color in the presence of specific DNA sequences. We are currently using this approach to differentiate the invasive vining plant *Celastrus orbiculatus* (oriental bittersweet) from the native *Celastrus scandens* (American bittersweet). This approach is beneficial because these species are very similar in their morphology and can only be distinguished by sight when fruiting. To develop this DNA sensor we first confirmed that our synthetic DNA “output” sequences have the desired peroxidase-like activity that is characteristic of G-quadruplexes. The output strands were then combined with other DNA strands to create molecular sensors that are reactive to DNA sequences found in only one of the specific sequences.

Eight Week Dietary Intervention of The Effect of Pecans on Cardio-Metabolic Parameters: Body Composition

***Grace Huebner**, Dana Swope, Samuel McCormick and Rebecca Brannan**
Viterbo University

Faculty Mentor: Maria Morgan-Bathke

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Foyer, Poster #56, 2-3pm

ABSTRACT:

The number of individuals with Type II Diabetes Mellitus (T2DM) continues to rise in the United States. If poorly managed, T2DM can lead to loss of limbs, blindness, chronic kidney disease, neuropathy and other critical conditions. Previous studies have shown that diets rich in monounsaturated fatty acids (MUFAS) can be a method for managing blood glucose, triglycerides and body composition. Managing these three parameters can prevent T2DM in adults. In this study, the effect of adding 1.5oz of pecans, which are rich in MUFAs, into an individual's daily diet for eight weeks was evaluated to determine the effect of pecans on body composition. Visceral body fat, waist to hip ratio (WHR), BMI and total body fat percentage measurements were completed both pre- and post-intervention on 10 subjects (1 Male). WHR was looked at because having a high WHR (being upper body obese) correlates to increased risk of chronic diseases such as diabetes. Pre-intervention measurements showed that there was no significant difference between age, WHR, body fat percentage or visceral body fat. After the eight-week dietary intervention experimental parameters were re-measured. Post-intervention measurements showed no significant differences in the control group compared to baseline values. Similarly, we found no differences for the pecan group post-intervention when compared to baseline values. There was also no significant difference post-intervention between the two groups. In conclusion, an eight-week dietary intervention of pecans does not alter body composition in pre-diabetic individuals. This may be due to the fact that many of the participants have poor dietary habits and solely adding pecans is not sufficient enough to alter the effects of poor dietary intake. In addition, the dietary intervention of pecans may need to be extended to observe a significant change in body composition.

Nanoparticle impact on E. coli Prolyl tRNA Synthetase Structure and Catalytic Activity

Olivia Hurst* and Stanford Mitchell*
University of Wisconsin-Eau Claire

Faculty Mentor: Sachita Hati

Presentation Type: Poster Presentation

Presentation Location and Time: Reinhart Center Boardroom, Poster #6, 2-3pm

ABSTRACT:

In recent years, nanotechnology has emerged as an exciting scientific discipline with far-reaching applications. Of particular interest to members in the scientific community is the use of nanoparticles in biological systems. Nanoparticles can be implemented in novel drug delivery systems in addition to other medically relevant applications. Factors that influence interactions between nanoparticles and proteins are currently under investigation. Developing a functional knowledge of these interactions can be used to generate nanoparticles compatible with biological environments. Interactions between nanoparticles and proteins have been investigated recently.¹ However, the specific interaction between nanoparticles and aminoacyl-tRNA synthetases is currently underexplored.

Aminoacyl-tRNA synthetases (AARS) are enzymes responsible for attaching amino acids to a conjugate tRNA molecule.² The central research interest in our group over the past few years has been elucidating the structure and dynamic function of one of the twenty aminoacyl-tRNA synthetases in E. coli: prolyl-tRNA synthetase (ProRS). The goal of this project is to determine how different sized nanoparticles can impact the enzymatic function of ProRs.

The Effects of Stress on Tau Build-up in Long Evans Rats

Brooke Johnston
Viterbo University

Faculty Mentor: Dr. Charles Lawrence

Presentation Type: Poster Presentation

Presentation Location and Time: Fine Arts Center Main Theatre Lobby, Poster #18, 2-3pm

ABSTRACT:

According to the CDC, Alzheimer's disease is the 6th leading cause of adult death in the United States. In 2013, an estimated 5 million American citizens were living with the disease (Division for Population Health, 2015). Alzheimer's is a neurodegenerative disease that affects a person's ability to recall memory and perform everyday mental tasks. Stress in development has been linked to many medical and mental problems such as: ischemic heart disease, cancer, chronic lung disease, depression, and drug abuse (Felitti et al, 1998). Stress has been known to have a great affect on the brain; an one experiment in rats showed stress early on in life has an epigenetic effect on the BDNF gene in the hippocampus (Seo et al, 2016). The BDFN gene regulates neurogenesis in the brain (Kikusui et al, 2009). Alterations in this gene, specifically in the hippocampus can lead to learning and memory problems (Adachi et al, 2008). Alzheimer's disease, the most common form of dementia, is distinguished by Amyloid- β plaques and Tau Protein tangles. This study looked at whether stress during development has an affect on Tau protein build up. This was tested by analyzing the brains of 10 Long Evans Rats stained by immunofluorescence specifically for Tau protein. The Tau proteins were highlighted under florescence when sections were stained with the Tau antibody. A cortical comparison was made, using a Rat Brain Atlas, between stressed and non-stressed rats. Results did not support the hypothesis.

Desire for a Food Oasis in a Food Desert

Katelyn Kaiser**, *Stacy Lehman**, *Stephanie Varilek*
Viterbo University

Faculty Mentor: Janet Holter

Presentation Type: Poster Presentation

Presentation Location and Time: Fine Arts Center Main Theatre Lobby, Poster #30, 2-3pm

ABSTRACT:

As a community, La Crosse has two food deserts at opposite ends of the city. While efforts have been made to remedy the need for access to healthier food options in these areas, people in the community are still experiencing food insecurity. This Photovoice presentation seeks to educate individuals in La Crosse about the challenges that exist concerning food insecurity and food deserts, as well as detailing some possible interventions that may address this challenge. Through images taken around the La Crosse area, individuals can look into the lives of those who face the challenge of living in a food desert.

Analyzing Historical and Cultural Perspectives of Women's Roles in the Early Modern Period through John Webster's *The Duchess of Malfi*

Ivy King*

Viterbo University

Faculty Mentor: Susan Cosby Ronnenberg

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Foyer, Poster #63, 3-4pm

ABSTRACT:

My research focuses on the English early modern period's representation of women's roles in John Webster's play *The Duchess of Malfi* (1623), which is a retelling of an actual historical person's story, Giovanna d'Aragona. Along with Webster's play, I read a variety of scholarly critical sources about historical and cultural perspectives on women in this particular time period. Some of these titles include Barbara Banks Amendola's *The Mystery of the Duchess of Malfi* and Merry E. Wiesner's *Women and Gender in Early Modern Europe* and they furthered my understanding of why the Duchess acts the way she does in the play. After reading, comparing, and discussing these sources, I narrow my focus to three main scenes to analyze how women's roles are represented in tragedies during the early modern period. The scene of the marriage between Giovanna and Antonio represents marriage customs and women's roles in their lives. In the scene when Giovanna's brother discovers the secret marriage, she must justify how she has the right to choose for herself. The Duchess sends Antonio away, and then follows her husband under a feigned pilgrimage, which represents religious expectations of the period. This research helped me to develop a more focused question for my capstone project, which I will be developing next year.

Exploring the Generalizability of a Self-As-Doer Intervention

Alyssa Klenotich*

Winona State University

Faculty Mentor: Amanda Brouwer

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Room 195, Poster #31, 3-4pm

ABSTRACT:

The Self-as-doer, an identity linking self-concept and behavior, has been associated with behavioral persistence in physical activity and healthy eating behaviors and the self-as-doer intervention has helped women maintain healthy eating behaviors. However, the generalizability of self-as-doer identity intervention to other nutrient intake has not been explored. Therefore I investigated whether the self-as-doer intervention would lead to a positive improvement in sodium and saturated fat intake.

Participants were 89 women, 18-53 years old ($M= 22.92$, $SD=6.92$) randomly assigned to one of three conditions (i.e., control, nutrition education only, or education and self-as-doer activity). A secondary analysis of 27 of the 79 original women were analyzed for this study. Participants were asked to use a food diary to record their food intake for four days. The food diaries were analyzed before the intervention and one month after the intervention. Two mixed-design, repeated measures ANOVAs were computed.

There was not a significant change in saturated fat consumption. There was no main effect of time ($F(1,24)=.130$, $p=.72$), interaction effect, ($F=(2,24)=.347$, $p=.71$) or main effect of the group, $F(2,24)=.30$, $p=.74$. There was also no main effect of time ($F(1,31)=.07$, $p=.79$), interaction effect ($F(2,23)=.27$, $p=.77$) or main effect of the group ($F(2,23)=.32$, $p=.77$) for sodium consumption.

Non-significant results could be explained because participants may not have replaced their typical foods with fruits and vegetable, but instead adding servings. This may indicate that the self-as-doer intervention may help some aspects of a diet (e.g. increase vegetable intake) but not all areas of diet (e.g. sodium intake). However, the trend for saturated fat indicates that both the education and control group increased in saturated fat, where as the self-as-doer group decreased; showing promise for the self-as-doer effect. Future research with more participants is needed.

The Decoy Effect

Cassidy Kleven*

Winona State University

Faculty Mentor: Dr. Carrie Fried

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Foyer, Poster #49, 3-4pm

ABSTRACT:

This study was a variation of the decoy effect. The decoy effect in the marketplace is when customers tend to have a change in preference between two options when a third option, the decoy, is presented. A survey was randomly administered to students in the Winona State Library. The survey gave participants a scenario including purchasing options to choose from. One version of the survey offered three options and the other only offered two. All participants were asked to rate each option on a scale of 1-7, 7 meaning that it is a great deal. A between subjects ANOVA revealed that having the decoy, or third option, significantly changed the ratings given for each option.

#fitspiration: Social Media's Influence on Thin versus Fit Body Image Ideals

Kortney Wobbe, Katharine Nicoson*, Brian Mockler*, Hanna Potter*, Marisol Martinez*, Summer Lardy*, and Elizabeth Lief **

Saint Mary's University of Minnesota

Faculty Mentor: Dr. Elizabeth Seebach

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Room 195, Poster #35, 3-4pm

ABSTRACT:

An aspect of body image involves the internalization of the ideal body type, which results in body dissatisfaction due to the unrealistic examples present in social media. Social media is a platform being used by people of a range of ages and involves body image ideals such as fit, thin, and muscular. Figures were looked at by searching the top 12 hashtags relating to body image on three major social media sites: Facebook, Instagram, and Pinterest. Results indicate that while there is no significant difference ($P > .05$) between the proportion of body types (endomorph, mesomorph, ectomorph), there was a significant difference ($P = .027$) shown by crosstabs analyses and body type represented in hashtags. Similarly, there was significant difference ($P = .000$) in body type across the three social media sites; muscular being most represented in Instagram. This may be significant as it relates to the shift in body image ideals and the possibility that ideals body images could be shifting from being thin to more muscular. More research will be conducted.

The impact of the dietary supplement HemoHIM on humoral and cell mediated immunity

Sarah Laska, Jordyn Messling*, Jeremy Heinle, Prescilla Ramirez, Raelynn Speltz, Acacia Wimmer*

Saint Mary's University of Minnesota

Faculty Mentor: Dr. Jeanne Minnerath

Presentation Type: Poster Presentation

Presentation Location and Time: Reinhart Center Boardroom, Poster #13, 3-4pm

ABSTRACT:

HemoHIM is a dietary supplement comprised of extracts isolated from the herbs *Angelica radix*, *Cnidii rhizoma*, and *Paeonia radix*. Studies indicate that mixtures of these herbs affect immune cell activation, including cytokine production. The goal of the present study was to determine whether commercially available HemoHIM also affected immune function. To do this, two groups of mice (n=13 per group) were fed HemoHIM diluted in water or water alone for ten weeks. Following four weeks of treatment, the mice were immunized with ovalbumin (OVA) to elicit a humoral immune response. Serum samples were collected at 0, 2, 4, and 6 weeks post-immunization, and anti-OVA antibody titers were measured. After ten weeks of treatment, splenocytes were isolated from the mice and cultured with LPS or ConA to induce TNF- α and IL-2 production, respectively. The effect of HemoHIM on anti-OVA antibody production is still being investigated. Results indicate that following stimulation with LPS or ConA, splenocytes isolated from HemoHIM-treated mice produced significantly greater amounts of IL-2 and TNF- α production compared to splenocytes isolated from control mice.

Creativity: Necessity For Development or Wasted Outlet

Jessi Lawrence*

Viterbo University

Faculty Mentors: Michael Wodzak and Vickie Holtz-Wodzak

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Foyer, Poster #62, 2-3pm

ABSTRACT:

Is creativity an essential aspect of child development or are strictly facts what help a child learn and progress?

This research contains the literary analysis of Charles Dickens, "Hard Times". Mr. Gradgrind, a main character in the text, believes that facts are the way of life. He has a teaching style of strictly facts, giving his students and children no creative outlet. This unique way of raising children is analyzed and compared to research that has been done regarding the importance of creativity in child development. The goal of this research is to determine if Mr. Grandgrind's strict views of only allowing facts displays the same results as research that has been done regarding whether or not creativity is crucial to child development.

Narcissism, Likability, and Extraversion: A Quantitative Analysis on the Perception of a Strangers' Instagram Profile

Samantha Lee*

Winona State University

Faculty Mentor: Dr. Carrie B. Fried

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Room 195, Poster #41, 3-4pm

ABSTRACT:

People often first “meet” others through their online presence in social media sites, such as Instagram. It is natural, then, that viewers often make assumptions about the personality characteristic of strangers based on the pictures they post. Pictures ranging from selfies, group friend photos, and scenery photos may lead to different varying perceptions, though the type of pictures posted on that social media platform has not been widely explored. The present study explores whether certain types of pictures posted, selfies, group friend photos, or scenery photos, lead to thinking a person is narcissistic, likable, or extraverted. Students at WSU were to view an Instagram profile and rate whether the “stranger” was narcissistic, likable, or extraverted. The “stranger” was either male or female and the pictures on the profile were either all selfies, all group friend photos, or all scenery photos. There are both differences in perception depending the the type of photo and the gender of the Instagram profile. Future researchers could delve into whether or not the gender of the subject taking the questionnaire leads to certain types of perceptions.

Dietary Intake & Fasting Blood Glucose in Individuals with Pre-Diabetes

Samuel McCormick**, *Grace Huebner*, *Dana Swope*, *Rebecca Brannan
Viterbo University

Faculty Mentors: Maria Morgan-Bathke, Karen Gibson

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Foyer, Poster #52, 2-3pm

ABSTRACT:

Background: Research has indicated that there may be a positive association between increased proportions of monounsaturated fatty acid (MUFA) intake and improved blood glucose levels. There has also been literature indicating there may be a link between intake of micronutrients such as iron, selenium, magnesium, vitamin E, and zinc and blood glucose levels. Using the validated Vioscreen food frequency questionnaire (FFQ), the current study aims to outline the relationship between various micronutrients and fasting blood glucose (FBG) levels as a marker of insulin resistance in individuals with pre-diabetes.

Objective: To outline the effect of dietary micronutrients on FBG in individuals with pre-diabetes using the Vioscreen FFQ. For our methods, all participants completed the Vioscreen FFQ. Participants were required to be fasting for at least 8 hours before blood glucose test was performed. Fasting blood glucose was compared with dietary intake of iron, selenium, magnesium, vitamin E, zinc, MUFAs, polyunsaturated fatty acids (PUFAs), and saturated fatty acids (SFAs).

Results: A univariate regression analysis of FBG compared with intake of different micronutrients gathered via Vioscreen FFQ showed a number of correlations. There was a statically significant negative correlation between fasting blood glucose (FBG) and dietary intake of total cholesterol ($r=-0.12$, $p=0.02$), iron ($r=-0.48$, $p=0.04$), selenium ($r=-0.56$, $p=0.01$), magnesium ($r=-0.5$, $p=0.02$), zinc ($r=-0.45$, $p=0.04$), MUFAs ($r=-0.61$, $p=0.01$), saturated fatty acids (SFA) ($r=-0.58$, $p=0.01$), and polyunsaturated fatty acids (PUFA) ($r=-0.41$, $p=0.04$). A negative correlation was present between FBG and vitamin E, however the finding did not reach significance ($r=-0.282$, $p=0.17$).

Conclusions: Data gathered from the Vioscreen FFQ suggests that there are significant correlations present between certain micronutrients and FBG levels for individuals with pre-diabetes. These results indicate that increasing the amount of dietary iron, selenium, magnesium, zinc, MUFAs, SFAs, and PUFAs may be a valid dietary intervention for the treatment and maintenance of pre-diabetes. A noteworthy finding of this study was the negative relationship between PUFAs ($r=-0.41$, $p=0.04$), MUFAs ($r=-0.61$, $p=0.01$), and SFAs ($r=-0.58$, $p=0.01$). This finding supports the theory of a high fat, low carbohydrate diet as an intervention for the maintenance of blood glucose levels in those with insulin resistance. It is particularly interesting that increased proportions of dietary SFA were associated with lower FBG levels, considering current 2015 U.S. Dietary Guidelines suggest limiting saturated fat in the diet. It must be noted however, that the sample size used was fairly small with 10 participants. This limitation indicates more research must be done to clarify the specific relationship, and mechanism in which the micronutrients tested affect FBG levels.

Why Won't You Just Listen to Me? Study About the Willingness to Compromise Between Liberals and Conservatives

Maria Michels*

Viterbo University

Faculty Mentor: Michael Parker

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Foyer, Poster #50, 2-3pm

ABSTRACT:

The current experiment tested the effect of self-affirmations and messages about the benefits of political diversity on attitudes toward political compromise. Past research suggests people react with hostility when dealing with people who do not share the same moral beliefs (Skitka et al, 2005). Moreover, political identification is associated with one's core moral convictions (Parker & Janoff-Bulman, 2013), suggesting that an overall lack of compromise in our political system is due to the moralized nature of political social identity. Research has suggested people are more likely to compromise and prejudice is reduced after self-affirming their own beliefs (Brandt et al, 2016); therefore, in this experiment we hypothesized that highlighting the benefits of political diversity (demoralization) and self-affirmation would improve attitudes toward compromise in general and on specific political issues. We collected data from 248 participants online, and each was randomly assigned to read about the benefits of political diversity and to watch a video on similarities between Democrats and Republicans, or they were assigned to a condition that highlighted differences between Democrats and Republicans. They were then assigned to a self-affirmation condition in which they wrote about two important values, or a control condition in which they wrote about two unimportant personal values. Our dependent measures included perceived harm of political diversity, a single item measuring a general desire for compromise in Congress, and a 12-item scale measuring desire for compromise on specific issues. Our results suggested demoralization decreases the perceived harm to society from political diversity, and increased both general and specific desires for compromise. Perceived harm mediated the relationship between demoralization and desire for general compromise (but not compromise on specific issues). Additionally, we found that political conservatism and religiosity both predicted more negative attitudes toward compromise, both in general and on specific issues. There were no effects of self-affirmation on any of the dependent variables.

Using DNA sequencing and microscopy to gather needed data on three mushroom candidates for the IUCN Red List

Christian Montes*

University of Wisconsin-La Crosse

Faculty Mentor: Todd Osmundson

Presentation Type: Poster Presentation

Presentation Location and Time: Reinhart Center Boardroom, Poster #9, 3-4pm

ABSTRACT:

In order to assess the conservation status of a species, reasonable estimates of that species' rarity, geographic range, and ecology are necessary. Taxonomic questions, incomplete knowledge of occurrence and geographic range, and other sources of uncertainty can result in a lack of the information necessary to assess conservation threat level. The objective of this project was to gather important data on mushroom species that are candidates for the IUCN Red List. Three species, assessed for inclusion on the Red List but classified as Data Deficient due to taxonomic or geographic uncertainty, were examined: *Laccaria pseudomontana*, *Lepiota luteophylla* and *Amanita zayantensis* nom. prov. Herbarium specimens were obtained and used for examination of microscopic features and DNA extraction for sequencing of the nuclear ribosomal internal transcribed spacer locus. Data acquisition is currently in progress. Preliminary results and implications for conservation assessment will be discussed.

State of the Workforce 2016/2017: Employee Retention and Satisfaction

Katie Mormann*
Viterbo University

Faculty Mentor: Rochelle Brooks

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Foyer, Poster #58, 2-3pm

ABSTRACT:

This project is a follow-up study on retention and satisfaction, focused on generational differences, following up on a study that was completed in 2005 by the Western Wisconsin Workforce Development Board. Through the past study, the board was able to predict and recommend solutions for workforce challenges that area businesses were encountering. It has been predicted by the United States Bureau of Labor Statistics and the Wisconsin Department of Workforce Development that serious workforce challenges were to begin around 2008 and reach peak in 2020 due to the retirement of the baby boomers. With having four generations in the workforce, it is important that companies are able to accommodate all generations. To collect data, area businesses in many industries were recruited to have their employees take a paper or electronic survey. In return, each company receives a report on its results, along with a copy of the 2016/2017 State of the Workforce Report that will be produced based on the results of this study. This project is still in progress, but the results from one organization will be presented. The results will give companies insights into how to better serve their employees.

Inhibition, binding affinity, and substrate specificity of human mitochondrial RNase P

Laura Muehlbauer*, Nancy Wu, Kipchumba Kaitany, Carol Fierke
St. Olaf College

Faculty Mentor: TBD

Presentation Type: Poster Presentation

Presentation Location and Time: Reinhart Center Boardroom, Poster #8, 2-3pm

ABSTRACT:

Transfer RNA is synthesized as a precursor transcript (pre-tRNA) with extra nucleotides at the 3' and 5' ends. One of the essential steps in processing pre-tRNA is the removal of the 5' leader sequence through phosphodiester bond hydrolysis. This is catalyzed by ribonuclease P (RNase P), a metal-dependent endonuclease that is present across all domains of life. While RNase P is typically an RNA-dependent enzyme, protein-only RNase P (PRORP) is also found in eukaryotes. Humans, for example, have two RNase P enzymes: a nuclear RNA-based RNase P and a mitochondrial PRORP. Unlike plant PRORPs that function as single subunits, human mitochondrial RNase P consists of three protein subunits. The third subunit, MRPP3, shares 22% sequence identity with PRORP1, the *A. thaliana* PRORP that localizes to the mitochondria and chloroplasts. Therefore, PRORP1 is used as a simpler system to study MRPP3. We measured the enzymatic activity of human mitochondrial RNase P in the presence of two compounds that inhibit PRORP1: gambogic acid and juglone. Inhibitors are important tools to understanding the enzyme, and inhibition studies can assist in designing antibacterial compounds that target RNase P. Additionally, the steady-state activity of human mitochondrial RNase P was measured with several human pre-tRNA substrates to investigate substrate specificity and the effect of the leader lengths. The data suggest that pre-tRNA leader lengths do not affect the enzyme binding affinity. Furthermore, there were no significant differences in reaction rates between different substrates, suggesting that RNase P does not recognize the primary tRNA sequence, but instead may recognize the folded structure. Overall, these experiments will enhance our understanding of the specificity, structure, and importance of RNase P.

The Prevalence of Mind-wandering in the Recovery Population

Hollyann Niemiec*
Viterbo University

Faculty Mentors: Bill Bakalars and Debra Murray

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Room 195, Poster #37, 3-4pm

ABSTRACT:

Matt Killingsworth (2013) in his research describes happiness as a paradox. He states we try to make ourselves happy yet we actually haven't gotten happier. One of the factors that contributes to unhappiness is mind-wandering. Killingsworth describes mind-wandering as the ability to focus attention on things other than the present. Similar to happiness, chemical use also has a paradox which is knowing the effects and consequences of substances and still engaging despite them. Even though chemical use brings people the euphoria they believe is happiness in the moment, it later goes away. This is similar to mind wandering because like substances it is used to avoid negative feelings or situations. The present research seeks to focus on the prevalence of mind wandering in addiction and recovery (Killingsworth, 2013).

Characterization of PKA regulatory subunit, PRKAR1, in zebrafish

Gulnara Novbatova*
Waldorf University

Faculty Mentors: Dr. Caroline Sussman and Dr. Gary Coombs

Presentation Type: Poster Presentation

Presentation Location and Time: Reinhart Center Boardroom, Poster #10, 2-3pm

ABSTRACT:

Autosomal dominant polycystic kidney disease (ADPKD) is an inherited condition characterized by small, fluid-filled sacs called cysts developing in the kidneys. ADPKD is caused by mutations in PKD1 and PKD2 genes, which encode Polycystin 1 (PC1) and Polycystin 2 (PC2). The mutations can lead to disruption of normal kidney function, pain, reduced quality of life and eventual kidney failure. Previous studies suggest the involvement of dysregulated cAMP in ADPKD pathogenesis. The elevated level of cAMP is thought to result in an aggravated ADPKD phenotype, at least in part, by activating cAMP-dependent protein kinase A (PKA), which leads to impaired tubulogenesis, increased cell proliferation, increased fluid secretion and interstitial inflammation. We are studying the mechanism of PKA regulation through its regulatory subunit PRKAR1 in ADPKD using zebrafish. Our previous studies have found that Prkar1a mouse knock-outs have renal cysts. Zebrafish have three PRKAR1 orthologs, Prkar1aa, Prkar1ab, and Prkar1b. We used RT-PCR to amplify these zebrafish genes in 15 embryos for SNP analysis, which will be used for designing CRISPRs to observe effects on PKD phenotypes. In addition, we generated probes for in situ hybridization for analysis of tissue expression. All three PRKAR1 orthologs were expressed in brain and eyes of 3 days post-fertilization zebrafish embryos. Future studies will examine the effect of depletion of PRKAR1, as well as tissue expression in older zebrafish.

Growth Comparison Between Three Varieties of Yellow Beans

Christopher Pasquale*
Viterbo University

Faculty Mentor: Sr. Lucy Slinger, FSPA

Presentation Type: Poster Presentation

Presentation Location and Time: Fine Arts Center Main Theatre Lobby, Poster #23, 3-4pm

ABSTRACT:

Previously, at the FSPA garden varieties of snap beans have been grown to determine the best producer. This research continued on with that study by comparing the performance among three varieties of yellow beans. The three varieties used were Goldmine, Cherokee, and Gold Crop Bush Beans. My hypothesis expected Cherokee to be the highest yielding and quality plant.

Four 4' plots per variety with 16 plants per plot were established. Beans were planted on natural raised beds with kohlrabi planted in center of bed and beans. Paper cardboard and mulch were placed in between rows to decrease the amount of weed growth. Weeding was continuous throughout the growing season. Compost tea was poured on each plant weekly until plants started to blossom. Harvesting took place within every two weeks, and beans were weighed by plot and recorded in grams across the production season.

The results revealed that the Goldmine variety was not as successful as the Gold crop and Cherokee beans. There was no apparent pattern of one variety producing earlier, mid or late season. However, Gold crop appears to have greater production towards the end of the season while Cherokee seems to be an early to mid-season producer. Through data analysis, the hypothesis was shown to be partially validated.

The research conducted is crucial for the FSPA organic garden. Results from collaborative research help improve overall efficiency and costs by determining what varieties grow best in the heavy clay soils of the limited garden space. This information will be used to determine the best performing bean variety for this particular site in future years. Results from this year and last would suggest that Cherokee and Gold crop should be grown in the garden to improve efficiency and costs.

The Associations Between Level of Stress, Perceived Effect of Stress on Health, and College GPA

Allison Purvis*

Viterbo University

Faculty Mentor: David Saunders-Scott

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Room 195, Poster #43, 3-4pm

ABSTRACT:

I examined the association between perceived level of stress, perceived effect of stress on health, and college GPA. Research has shown that the belief that all stress is bad for one's health can have a negative impact on health outcomes (Keller et al., 2012). If perception matters when it comes to one's health, it is also possible that it matters when it comes to one's academic performance. I hypothesized that perception about whether stress is bad for one's health would act as a moderator between students' level of stress and their college GPA. I collected data from 25 undergraduate students at Viterbo University. Results indicated that students' perception about whether stress is bad for them did not influence college GPA. However, student's perception about the effect of stress on health did account for 8.8 percent of the variance in stress levels.

Health Behaviors Associated with Substance Use Disorder Recovery

Dana Reedy*

Viterbo University

Faculty Mentor: Bill Bakalars and Debra Murray

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Room 195, Poster #34, 2-3pm

ABSTRACT:

Health and wellness-oriented behaviors may be helpful not only to aid substance use disorder (SUD) recovery but to reduce the risk of relapse. I analyzed over 60 interviews from 2009-2013 to find individuals recovered from SUDs who had engaged in health behaviors such as exercise and healthy eating habits and compared their relapse rates to those who did not engage in these behaviors. The findings from this research may be useful to develop treatments plans to make SUD recovery more likely to be effective on the first try.

Who got there first? Effects of yeast/bacterial colonization patterns on biofilm structure in kombucha

Benjamin Schilz*

University of Wisconsin-La Crosse

Faculty Mentor: Dr. Todd Osmundson

Presentation Type: Poster Presentation

Presentation Location and Time: Reinhart Center Boardroom, Poster #16, 2-3pm

ABSTRACT:

Bacterial-fungal biofilms are important in medicine, food production and safety, and natural and agricultural environments; however, much remains to be learned about the factors that influence the formation, maintenance, and dynamics of these multispecies communities. In this experiment, we cultured five strains of kombucha, a beverage consisting of tea fermented by a biofilm composed of bacteria and yeast, obtained from home growers and commercial sources. We extracted DNA from these cultures for metabarcoding to determine species composition of each biofilm. We also isolated individual colonies of bacteria and yeast for use in manipulative experiments to determine the role of interspecific interactions and priority effects – i.e., the influence of the order of species' arrival – on biofilm structure. Priority effects on physical structure, community structure, and patterns of spatial distribution of species, as well as evidence for changes in these variables over time, will be examined.

Preference of Natural Sugar vs. Artificial Sweetener in Long-Evans Rats

Desirae Schuh*

Viterbo University

Faculty Mentor: Dr. Charles Lawrence

Presentation Type: Poster Presentation

Presentation Location and Time: Fine Arts Center Main Theatre Lobby, Poster #20, 2-3pm

ABSTRACT:

The average American ingests 125 pounds of artificial sweeteners, annually (UPMC, 2016). Artificial sweeteners are non-caloric products used in place of caloric sucrose. According to the FDA, the acceptable daily intake (ADI) for aspartame is 50 mg/kg body weight (U.S. Department of Health and Human Services, 2015). If the 125 pounds ingested were only aspartame, someone weighing 180 pounds would ingest 38 times the ADI. The purpose of this research study was to test rat motivation with artificial and natural sugar consumption. Rat and human brains are structurally very similar and share the same neurotransmitters and receptors (Genetic Science Learning Center, 2013). Humans and rats also share similar genes in their reward pathways (Genetic Science Learning Center, 2013) which are activated by sugar and other addictive substances (Avena, 2008 & Fortuna, 2010) making rats a common model for addiction studies. The first research question was whether aspartame or sucrose would be the preferred sugar. It was also questioned whether rats would be willing to face a fearful situation in order to consume the preferred substance. In this study, 10 male Long-Evans rats were used to test the preference of aspartame versus sucrose. Rats completed two-bottle choice preference tests consisting of an aspartame solution and sucrose solution. Rats were placed in an elevated plus maze to test their motivation for preference. Data were analyzed via online independent sample t-tests. Rats chose a 2% sucrose solution over plain tap water and over a 0.2% aspartame solution, both with a $p < 0.001$. Motivation in the elevated plus maze for preferred sucrose was not evident. This study determined that sucrose is preferred over aspartame. One rat per housing pair was determined to be a high sucrose drinker while the other was determined to be a low sucrose drinker, suggesting a social hierarchy.

Exploring Relationship Maps Within the Substance Abuse Population

Natalie Semrad*

Viterbo University

Faculty Mentors: Debra Murray and William Bakalars

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Room 195, Poster #39, 3-4pm

ABSTRACT:

The purpose to my study was to compare participant's relationship maps to one another and examine specific relational occurrences, specifically four relational components present on their maps were the focus of this pilot project. Those four topics included illustration of self, alcohol or drugs present on map, presences of AA or NA, and if spirituality was present on any of their maps. Eleven participant's maps were randomly selected out of the sixty-three total participants in the study. Out of those eleven six were males ranging from ages twenty-nine to seventy-two years old and five participants were females ranging from ages twenty-four to forty-six years old at the time of the interview. The male population using years ranged from ten to sixty-five years old and the female population ranged from ten to forty-two years old. Participants were randomly selected from a random list of the sixty-three participants. The results showed that eight out of eleven (73%) participants illustrated themselves on their maps, three (27%) had alcohol or drugs present, six (55%) had AA or NA present, and three (27%) illustrated spirituality on their maps. Future research would include examining the whole sample size of the sixty-three total participants to see if trends are still present.

Nature Experiences and Knowledge about the Natural World

Xavier Smart*

Viterbo University

Faculty Mentor: Dr. Liza Ware

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Room 195, Poster #46, 2-3pm

ABSTRACT:

This research will seek to examine college undergraduates' thinking about taxonomic and ecological relations that exist in nature and how their knowledge of the natural world relates to their own experiences in nature and outdoor activities, and their perceived connectedness with nature. Prior research has examined how children and adults categorize and reason about living things by asking whether they group animals based on ecological relations (e.g., habitat or predation) or taxonomic relations (e.g., whether things belong to the same kind). These studies have shown that experience with nature is associated with understanding the natural world, for example, individuals that live in rural settings tend to emphasize ecological relations more than children that live in urban settings. The proposed research will further examine these associations in college undergraduates. Specifically, we will examine undergraduates' reasoning about the natural world, and how this reasoning relates to their experiences in and connections with nature, as measured by self-report survey data. The findings of this research will help us to better understand the relation between nature experiences and ecological understanding, and inform education interventions for teaching people about ecology and environmentally-friendly practices.

Expression of Neuropilin-1 and VEGF- α in Mice (*Mus musculus*) brain tissue exposed in utero to atrazine

Raelynn Speltz*, Jeremy Heinle, Acacia Wimmer
Saint Mary's University of Minnesota

Faculty Mentor: Dr. Debra Martin

Presentation Type: Oral Presentation

Presentation Location and Time: Reinhart Center Room 201, 1:20pm

ABSTRACT:

Widely used among farmers in the Midwest, atrazine is an herbicide that has leaked into water sources contaminating at levels measured between 9.1 and 25 ppb. The EPA states the safe level of atrazine in drinking water is 3 ppb. Previous studies have linked atrazine exposure to slower development. However, there is limited research and little experimentation has been done in the field of neurodevelopment in response to atrazine exposure. The purpose of this study is to examine whether atrazine exposure affects brain development. To investigate, the focus will be on the protein Neuropilin-1 and VEGF- α . Neuropilin-1 plays a role in signaling pathways and controls cell migration. Neuropilins also bind multiple ligands and co-receptors including VEGF- α . Mice were exposed during gestation to one of three concentrations of atrazine. Brain tissues were extracted 24-36 hours after birth. Neuropilin-1 and VEGF- α concentrations for each exposure were determined using an ELISA and Western Blots. The data displays a statistically significant relationship between elevated exposures to atrazine resulting in decreased proteins in the brain during development. Future studies should look at chronic results of exposure of mice to see how the decreased levels in proteins affects late development.

The Effect of Dietary MUFA's on Resting Energy Expenditure in Pre-Diabetic Individuals

***Dana Swope**, *Grace Huebner*, *Rebecca Brannan*, *Samuel McCormick*
Viterbo University**

Faculty Mentors: Karen Gibson, DCN, RD and Maria Morgan-Bathke, PhD, RD

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Foyer, Poster #54, 2-3pm

ABSTRACT:

Research has revealed there may be a positive association between increased monounsaturated fatty acid (MUFA) intake and increased resting energy expenditure (REE). Increases in REE could aid in weight loss, the most effective intervention to prevent disease progression. Results from this study will indicate if increased MUFA intake is a valid approach to improve REE in pre-diabetic individuals.

In practice, predictive equations are the most practical means to estimate a patient's REE. The most common equations are the Mifflin St. Joer and Harris Benedict, however their reliability remains unknown. This study aims to determine the accuracy of the predictive equations for the pre-diabetic population.

Participants include ages 18-70, previously diagnosed with pre-diabetes. The REE was measured using the Cosmed and compared to the predictive equations.

Participants were split into an intervention group, consuming 1 ½ ounces of pecans between 8am and 2pm daily for 8 weeks and a control. REE was measured pre and post intervention.

The MUFA intervention did not significantly change REE measured via Cosmed. The mean measured REE pre MUFA intervention 1535.8 ± 386.1 and 1764.4 ± 594.2 post intervention. We found no significant correlation between Cosmed and the predictive equations ($r = 0.19$, $p = 0.29$).

While we did not find a significant difference, MUFA intake slightly increased REE in pre-diabetic individuals. A higher number of participants may yield a significant change in REE with daily MUFA intake, therefore providing an effective dietary approach to aid in weight loss of pre-diabetic individuals.

The lack of correlation between predictive equations and REE is substantial in practice. Predictive equations are used to determine caloric needs as a measure to induce weight loss. Inaccurate measurements will impede weight loss goals. Therefore, measured REE, rather than predicted REE, should be used in this population to aid in weight loss.

Determining Biochemical Response of Single Human Colorectal Carcinoma Cell to Cesium Using Microfluidics and Raman Spectroscopy

Jessica Symons*, Bridget White, John Dank, Katie Schulties, Matthew Jones, Lindsay Horst, Nicole Maala, Johanna Meister, Eric Cinnamon
University of Wisconsin-Platteville

Faculty Mentors: Jorge Camacho and Miranda Bader

Presentation Type: Poster Presentation

Presentation Location and Time: Reinhart Center Boardroom, Poster #15, 3-4pm

ABSTRACT:

In this research, microfluidic technology and Raman spectroscopy are used to nondestructively provide quantitative and real-time measurements of the biochemical output of single colorectal carcinoma cells in response to cesium treatment. Microfluidic technology is being used to manipulate movement of cells/chemicals, entrap single cells, and measure the extracellular pH changes. Raman spectroscopy is being used to verify the physical location of cesium in/on cells and provide multivariate statistical differences in biochemical output of specific organelles induced by this cation.

Finding New Galactic Interstellar Neutral Hydrogen Shells

Rebecca Taylor*

University of Wisconsin-La Crosse

Faculty Mentors: Dr. Shauna Sallmen Dr. E.J. Korpela, Space Sciences Laboratory at the University of California at Berkeley

Presentation Type: Poster Presentation

Presentation Location and Time: Reinhart Center Boardroom, Poster #3, 3-4pm

ABSTRACT:

The interstellar medium (ISM) consists of low-density gas and dust and fills the space between stars in our Galaxy. When a supernova occurs, hot gas is blown out and interacts with the cool neutral hydrogen (HI) gas in the ISM. As the hot gas continues to expand, this surrounding HI gas is pushed out and forms a shell. These shells play a part in the recycling of gas in the ISM, so that later generations of stars contain more heavy elements. By increasing the number of known HI shells, a broader understanding of the evolution of interstellar gas can be gained. These shells can be found using Galactic Arecibo L-band Feed Array (GALFA) 21-cm radio data. The GALFA-HI survey's uniquely high angular resolution at high Galactic latitudes makes it ideal for identifying previously undiscovered shells. A visual search of these data can reveal new HI shells of small angular diameter located away from the Galactic plane. This search method removes the bias many automated search have against old, slowly expanding shells. For each potential shell, the location, velocity, angular size, and velocity range were determined, and various parameters describing shell quality (e.g. shell wall completeness) were estimated. The search found a total of 116 possible new shells ranging in size from 0.1 to 4.5 degrees. Many of these new shells could not be identified in data with lower angular resolution, due to their small angular size. The statistical properties of these newly found shells will be presented, along with details on selected examples.

Pests, Powder, and Permethrin: Eliminating Insects and Diseases in an Organic Garden

Amanda Vetsch*
Viterbo University

Faculty Mentor: Sr. Lucy Slinger, FSPA

Presentation Type: Poster Presentation

Presentation Location and Time: Fine Arts Center Main Theatre Lobby, Poster #26, 2-3pm

ABSTRACT:

The goals of the summer garden season are to care for the garden through weeding, maintenance, harvesting, watering, and learning. My project was specifically to study one of my duties as an intern, organic treatment methods of eliminating pests and diseases.

Breaking Down Language Barriers for English Language Learners

Kate Willadsen*

Viterbo University

Faculty Mentors: Maribel Bird, Lynda Fernholz

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Foyer, Poster #59, 3-4pm

ABSTRACT:

Currently, English Language Learners are the fastest growing population in U.S. elementary schools and studies show that this number will continue to rise (Sheng, Sheng and Anderson). Being a pre-service teacher, this has not strongly been addressed in my education but studies show, it should be. Pre-service teachers are also required to pass the Foundations of Reading Test before acquiring a degree in Wisconsin. On this test, ten percent of the questions regard teaching strategies when working with English Language Learners. Without proper education, it is difficult for pre-service teachers to pass this portion of the test. This portion of the test is where education seems to be lacking. By immersing pre-service teachers in a global experience during their education program, this will increase their ability to effectively work with English Language Learners in their future classrooms. One pre-service teacher, one classroom teacher, two professors, and one school administrator traveled to Nicaragua for ten days to teach literacy and math. The education team completed pre-teaching surveys and post-teaching surveys regarding our research. Some questions were open-ended while others were conducted through a Likert scale. After returning from the trip, the surveys were analyzed and the results were what was to be expected. Through the pre and post surveys, it was clear that either a global experience in a Spanish speaking country or experience working with English Language Learners during pre-service teacher's college education would be beneficial to their future occupation as a classroom teacher. This is something all university education programs should address and contemplate adding to their program.

The Impact of Art Therapy on Youth

Sara Wisniewski*
Viterbo University

Faculty Mentor: Vickie Holtz-Wodzak

Presentation Type: Poster Presentation

Presentation Location and Time: School of Nursing Foyer, Poster #61, 3-4pm

ABSTRACT:

Today's youth are faced with complications of a multitasking generation. Therefore, it has been harder for youth to hold attention with normative therapy bases. The use of alternative therapy methods, such as art therapy, allows for more interactive and expressive self discovery. This research dives into the process and benefits of art therapy by presenting a self exploration art project to La Crosse youth, ages 7-13. In this project, the children create "the house of their life," in which, they analyze their life, from their foundation, to how they blow off steam through their chimney. As a result, the children who participated in the project rated their understanding of self higher than that of those who chose not to participate in the art project. These findings would be beneficial in schools or youth settings where normative therapy may not be accessible to all students.

DNA Damage Associated with Muscular Dystrophy

Rick Young*, Issac R. Schwantes, Diane E. Cryderman, Lori L. Wallrath
Waldorf University

Faculty Mentor: Dr. Gary Coombs

Presentation Type: Poster Presentation

Presentation Location and Time: Reinhart Center Boardroom, Poster #12, 2-3pm

ABSTRACT:

Muscular Dystrophy is an X-linked disorder that affects 1 in every 100,000 people. Symptoms of muscular dystrophy include muscle atrophy, particularly in muscles of the upper arms and lower legs, and also cardiac defects. Mutations in the human LMNA gene are responsible for a minority of diagnosed cases of muscular dystrophy, with limited treatments currently available for these patients. The LMNA gene encodes A-type lamins, which are intermediate filaments that form a meshwork lining the inner nuclear membrane. Lamins provide structural support for the nucleus, and interact with chromatin to organize the genome. Potential mechanisms by which mutant lamins cause disease have been elucidated, including activation of the Nrf2/Keap1 redox pathway. To better understand mutant lamin function in disease, mutations were modelled in *D. melanogaster* Lamin C and mutant lamins were expressed in muscle. We found that mutant lamin *Drosophila* larvae with mutations in the head, rod, and tail of the LMNA gene show varying extents of cytoplasmic aggregation of lamin proteins as well as increased DNA damage when examined using confocal microscopy. These findings help better characterize LMNA mutations and suggest new avenues of therapeutic intervention that may improve treatment plans for LMNA patients.