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#### Undergraduate Research Forum 2015

St. Norbert College

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# Undergraduate RESEARCH SEARCH FORUM

Tuesday, March 31, 2015 1:00-4:00 PM, Mulva Library

# RECEPTION

Hendrickson Dining Room 4:00-5:30 PM

Guest speaker: Craig Dickman, CEO of Breakthrough Fuel

The Undergraduate Research Forum highlights the valued tradition at St. Norbert College of collaboration taking place in laboratories, studios, and other scholarly or creative settings between our students and our faculty and staff, resulting in a rich array of scholarly research and creative work.

This celebration features collaborative projects that evolved out of independent studies, class assignments, and casual interactions as well as formal collaborations supported by internal grant funding.

#### FORUM AT A GLANCE

All events in the Mulva Studio or on second floor.

#### **Oral Presentations**

Mulva 2nd Floor

1:00–1:30 1: Paitel and Gunderson, Modifications of local estradiol provision and hippocampal-dependent memory in zebra finches  1:30–2:00 2: Yanda and Grohman, In Our Own Image: The Making of Scientific Buddhism  2:00–2:30 3: Miller, Vue, and Zewdu-Habte, Startup Culture and the Student Worker: Innovation at the Cassandra Voss Center  4: Herzog and Haseley and Grossmeier, Creative (Non)fiction Essays Presented at the Sigma Tau Delta National English Honor Society Conference in Albuquerque, New Mexico, March 18–21, 2015.  2:30–3:00 5: Blank, A Fully-Automated Data Acquisition and Analysis System for the Cavendish Experiment  3:00–3:30 6: Kline and MacDiarmid, Homes: Original Poetry 3:30–4:00 7: Manson and Carroll, Critical Essays Presented at the Sigma Tau Delta National English Honor Society Conference in Albuquerque, New Mexico, March 18-21, 2015.				
Making of Scientific Buddhism  2:00–2:30  3: Miller, Vue, and Zewdu-Habte, Startup Culture and the Student Worker: Innovation at the Cassandra Voss Center  4: Herzog and Haseley and Grossmeier, Creative (Non)fiction Essays Presented at the Sigma Tau Delta National English Honor Society Conference in Albuquerque, New Mexico, March 18–21, 2015.  2:30–3:00  5: Blank, A Fully-Automated Data Acquisition and Analysis System for the Cavendish Experiment  3:00–3:30  6: Kline and MacDiarmid, Homes: Original Poetry  3:30–4:00  7: Manson and Carroll, Critical Essays Presented at the Sigma Tau Delta National English Honor Society Conference in Albuquerque,	1:00–1:30	1:	estradiol provision and hippocampal-dependent	211
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#### **Poster Presentations**

All poster presentations in the Mulva Studio (lower level) and on the 2nd floor.

1:00-1:30	1:	Potopa, Observational learning in captive wolves	2nd
	3:	Blank, A Fully Automated Data Acquisition and Analysis System for the Cavendish Experiment	2nd
	4:	Martell, Norbertine Presence in the Crusades	2nd
	2:	Beauchaine, Conversations in Cambodia	Studio
	5:	Hunnicutt, BIOL 365: Immunology, Flavobacterium columnare Vaccine Trial	Studio
	6:	Fuss, Results From Three Zooplankton Sampling Techniques in Gatun Lake, Panama Indicate Different Levels Of Effectiveness	Studio
1:30–2:00	9:	Vander Velden, Jooste, Fasola, Petrographic analysis of samples collected from Masaya Volcano	2nd
	11:	Moore, Women in the Dreyfus Affair	2nd
	7:	Anderson, Sheffield, and Regula, Petrologic History of Volcán Telica, Nicaragua	2nd
	10:	Coopman, Zooplanktivory in post-juvenile largemouth bass: Three decade record from a small north temperate lake	Studio
	12:	Johnson and Brennan, Uncovering developmental pathways required for protonephridial regeneration	Studio
	13:	Miller and Hartzheim, A Particular Polarity	Studio
2:00–2:30	14:	Gruber and Manderle, Norbertine Missions Project	2nd
	17:	Selner, Novel secondary metabolites from endophytes for antibiotic discovery	2nd
	15:	Martell, Scars of War: The Psychological and Physical Traumas of War Depicted through Art	Studio
	18:	Jackan, In vitro metabolism of Z-Endoxifen suggests mechanism for in vivo presence of Endoxifen methoxycatechol	Studio
	8:	Paitel, Learning and retention of spatial cues by zebra finches as revealed by microbehaviors and left-right discrimination analyses	Studio Media Scape

	2:30–3:00	21:	Schmitz, Sawalski, Dauman and Kostka, Characterization of fecal coliform bacteriophages isolated from effluent water at the Green Bay Metropolitan Sewerage District	2nd
		22:	Landerman, Technology Integration in the Elementary Classroom	2nd
		19:	Roets, Bullstrand, and Beine, Effects of Flavobacterium. columnare in a Danio rerio model infection system	Studio
		23:	Imhoff and Waldoch, Deforestation Dialogue: Buddhist and Catholic Perspectives	Studio
	3:00–3:30	7:	Anderson, Sheffield, and Regula, Petrologic History of Volcán Telica, Nicaragua	2nd
		24:	Baert, Chemical signaling between algae species in a Wisconsin river	2nd
		28:	Gear, Attributions of Obesity Stigmas and News Source in Two Leading Newspapers in the United States and South Korea	2nd
		31:	Brofka and Flesch, Effects of Vocal and Instrumental Music on Immediate Serial Recall	2nd
		33:	Wierzba, Examining the Relationship between Motivations of Mobile Check-ins and User Privacy Concerns	2nd
		34:	Geiser, Would You Care If You Are Eventually Locked Up? The Use of Legal Enforcement as a Normative Element to Prevent Texting While Driving	2nd
		16:	Wightman, Que(e)ry: LGBTQ Student Experience Survey	Studio
		25:	Henricks and Dassow, Comparison of Fish Community Assemblages in Two Panamanian Rivers	Studio
		27:	Dassow and Buelo, Cannibalism in largemouth bass: Three decade record from a small north temperate lake	Studio

	29:	Bauer, Paitel, and Gunderson, Truncated tyrosine kinase B receptor density in female zebra finches treated with the stress hormone corticosterone	Studio
	30:	Schwantes, Determining atomic temperatures using laser absorption	Studio
	32:	Larson and Nikolai, Composition of El Hormigon Cinder Cone Near Granada, Nicaragua	Studio
	35:	Bukouricz, Analysis of volcanic rocks extracted from Cerro Negro volcano, Nicaragua	Studio
	36:	Villanova, Zombies in Popular Media: An Analysis of Zombie Popularity Between Genders	Studio
3:30-4:00	37:	Arnold, Weigman, and Garcia, Investigating Memory Accuracy From a Visual or Written Stimulus with Suggestive Wording	2nd
	43:	Aparnieks, Women in Leadership	2nd
	13:	Miller and Hartzheim, A Particular Polarity	2nd
	38:	Brennan, Reducing algal blooms in Dream Lake: Algal and zooplankton seasonal dynamics indicate combined response to food web manipulation and winter kill event	2nd
	39:	Holzer, Grady, Young, and Ledwith, The effect of allelopathic compounds from garlic mustard (Allaria petiolate) and bracken fern (Pteridium aquilinum) on the viability of human cell lines	Studio
	40:	Bauer, Dassow, Fuss, and Henricks, Research Experience in Panama 2015	Studio Digital Screen
	41:	Lang, Bioinspired dyes from boron difluoride complexes	Studio
	42:	Flesch, Indole based structural analogs of modafinil inhibit the dopamine transporter	Studio
	44:	Piepenbrink and Sisler, The effect of resveratrol combined with dichloroacetate (DCA) on human cell lines	Studio

#### RESEARCH FORUM SPEAKER



Craig Dickman
CEO, Breakthrough Fuel
"Research and Innovation: Building an
Applied Knowledge Company"

Craig Dickman founded Breakthrough Fuel and currently serves as its CEO and chief innovation officer. As an experienced entrepreneur and business executive, he saw the opportunity to transform the way products are moved to market through the innovative management of energy. These innovations have produced multiple patents and established Breakthrough Fuel as the industry's leading mobile energy and energy

information management company. Mr. Dickman is currently responsible for the company's business strategy and leads the innovation and new product development processes for Breakthrough Fuel.

Prior to founding Breakthrough Fuel, he served as President and CEO of Paper Transport, Inc. (PTI) from 2001 through 2006. Under his leadership, PTI experienced growth in revenue and income in excess of four-hundred percent. Mr. Dickman achieved this growth through expansion into new markets and the addition of diverse service offerings, while adding strategic new technologies giving PTI the technical and communications capabilities of its larger rivals. Mr. Dickman received his Bachelor of Science degree in business from the University of Wisconsin-Green Bay and his Master's in Business Administration from the University of Wisconsin-Oshkosh.

An active member of the community, he currently serves as Vice President and Commissioner for the Brown County Harbor Commission, which oversees the Port of Green Bay. He serves on the University of Wisconsin Green Bay's Council of Trustees and Foundation Board, the board of Downtown Green Bay, Inc., and serves as President of the Bay Valley Lacrosse Association, which runs the high school lacrosse programs in Northeast Wisconsin. He was previously Chairman of the Wisconsin Timber Rattlers, Class A professional baseball team and was instrumental in bringing the Milwaukee Brewers affiliation to the team. Mr. Dickman has also held elected positions with the Green Bay City Council and the Brown County Board of Supervisors. He is the inventor on two patents for energy management, US Patent 7,729,998 and 8,190,533 and currently has two additional patents pending.

#### ABSTRACTS

#### **Oral Presentations**

Oral 1: Modifications of local estradiol provision and 1:00–1:30 hippocampal-dependent memory in zebra finches

Elizabeth Paitel, Psychology and Spanish

Mulva 211 Jordan Gunderson, Biology with Biomedical Science Concentration David Bailey, Associate Professor of Biology

Estradiol, produced in abundance in the brain via the enzyme aromatase, is important in the learning and performance of hippocampal-dependent memories. Previously, our lab found that inhibition of hippocampal aromatase resulted in decreased spatial learning and memory performance in the zebra finch. This presentation will detail the effects of two additional manipulations on hippocampal-dependent memory: first, the effects of aromatase inhibition plus estradiol replacement and second, the application of agonists or antagonists of the membranebound estradiol receptor. Data from these studies are providing evidence that the local and acute provision of estradiol modifies cognitive output of the vertebrate brain.

Oral 2: In Our Own Image: The Making of Scientific Buddhism

1:30-2:00 David Yanda, Biology

Greg Grohman, History and Sociology

Mulva 212 Mara Brecht, Assistant Professor of Theology and Religious Studies

Carrie Kissman, Assistant Professor of Biology and

Environmental Science

Eric Hagedorn, Assistant Professor of Philosophy

The belief that science and religion uphold competing methodological and factual claims was initiated by the scientific revolution of Europe's early modern period. The flowering of modern science coincides with an increased Western interest in Eastern religions, and Buddhism in particular. While Christianity has been subjected to severe scientific scrutiny in the West, Buddhism and science are increasingly discussed as compatible. We explore how Buddhism has been constructed as scientifically oriented, and argue that the spiritual crisis catalyzed by modern science has invited Western appropriation of an exotic religion to fit post-Enlightenment rationality.

Oral 3: Startup Culture and the Student Worker:

2:00–2:30 Innovation at the Cassandra Voss Center

Anna Miller, English and Women's and Gender Studies

Mulva 218 Kahlo Vue, Communications and Media Studies

Gabby Zewdu-Habte, English

Elizabeth Schmitt, Political Science

Anna Czarnik-Neimeyer, Assistant Director of the

Cassandra Voss Center

How do we cultivate student workers to push for innovation in our gender programs? At the Cassandra Voss Center (CVC) we develop core values to change the conversation about gender and identity. Forging ahead using startup-culture sensibilities, we create staff philosophy that is mission-driven, utilizing experiential activities, WMGS texts, storytelling, icons, reflection, and student delight to equip workers to be bold. In this panel we discuss our staffing structure and philosophy, and CVC student workers describe how they push for innovation through "GenderSmart" PR, Critical Masculinities work, cocurricular service, and strategic research, putting innovation at the center. We'll discuss how we cultivate workers that invest in our mission and embody a fresh social justice sensibility that we call the "CVC Way."

Oral 4: Creative (Non)fiction Essays Presented at the Sigma Tau Delta 2:00–2:30 National English Honor Society Conference in Albuquerque, New Mexico, March 18–21, 2015.

Mulva 212 Colin Herzog, English and Communication and Media Studies Hannah Haseley, English

Kacie Grossmeier, English

Laurie MacDiarmid, Professor of English and Writer-in-Residence Colin Herzog, "Romancing the Story: The Functions of a Scene." When writing, there is a tension between telling and showing information or development. As nice as showing is, when you do show a scene, you need to use it to its full potential, and this is a guide of how to do just that: get the most out of your scenes, which will help you analyze other works you read or even watch. Hannah Haseley, "Fourth Row Center: I'm Sitting Right Behind You." After a brief synopsis of my experience with growing up chronically ill with something called an "invisible illness," which creates a dual identity for those who are diagnosed with such an illness since it is difficult to understand something that is invisible.

Kacie Grossmeier

I will read an original fiction piece titled "Kestrel," It' a scene from a larger work of dystopian fiction where the country undergoes a civil war and my main character Willow has to escape or else be put back into prostitution.

Oral 5: A Fully-Automated Data Acquisition and 2:30–3:00 Analysis System for the Cavendish Experiment

Bradley Blank, Computer Science and Mathematics

Mulva 211 Michael Olson, Assistant Professor of Physics

We report on a low-cost, fully-automated data acquisition and analysis system for use with a table top Cavendish apparatus in an advanced undergraduate physics laboratory. The system utilizes a calibrated web-camera to locate and record the position of a reflected laser spot.

Oral 6: Homes: Original Poetry

3:00–3:30 Carrie Kline, English

Laurie MacDiarmid, Professor of English and Writer-in-Residence

Mulva 212 Collaborative presentation of original poems composed together

on the theme of "home."

Oral 7: Critical Essays Presented at the Sigma Tau Delta National

3:30–4:00 English Honor Society Conference in Albuquerque,

New Mexico, March 18-21, 2015.

Mulva 211 Jaena Manson, English and Religious Studies

Jonathan Carroll, English and Psychology John Pennington, Professor of English

Jonathan Carroll, "Foiled Feminism in Hawthorne's

'Rappaccini's Daughter."

This essay argues that, although Nathaniel Hawthorne attempts to be sympathetic towards females in his story, he is ultimately unable to fully

break free of the patriarchal notions which dominated his culture. Jaena Manson, "The Puritan Influence on Mary Rowlandson's

Captivity Narrative."

This essay explores the relationship between Rowlandson's Puritanism and her conflict with Native American identity.

#### **Poster Presentations**

Poster 1: Observational learning in captive wolves

1:00-1:30 Adam Potopa, Environmental Science

Sarah Jones, Visiting Assistant Professor of Psychology

Mulva Recent work with wolves demonstrates similar performance to

2nd Floor domestic dogs in social learning tasks; this suggests that evolutionary

mechanisms may play a larger role in explaining the social abilities of dogs than artificial selection though domestication. To further explore the social learning capacities of wolves, we engaged captive wolves in a food location task, using a conspecific demonstrator. One of two visually-discriminable containers was consistently baited throughout each session Preliminary findings indicate that wolves were more effective at learning this discrimination after observing a conspecific complete the task, but not after observing a human complete the task.

Poster 2: Conversations in Cambodia

1:00–1:30 Annie Beauchaine, French

Tom Conner, Professor of French

Mulva I will be researching the country of Cambodia, Cambodian youth, and the role of English as a second language through a Skype program.

Each week I will Skype with a Cambodian youth and tutor them in English. In addition, I will do research to gain a better understanding of

Cambodia as a country with an emphasis on France's role in

interactions with Cambodian youth as I tutor in English and establish cross-continental relations.

Poster 3: A Fully-Automated Data Acquisition and

1:00-1:30 **Analysis System for the Cavendish Experiment** 

Bradley Blank, Computer Science and Mathematics

Michael Olson, Assistant Professor of Physics Mulva

> We report on a low-cost, fully-automated data acquisition and analysis system for use with a table top Cavendish apparatus in an advanced undergraduate physics laboratory. The system utilizes a calibrated web-camera to locate and record the position of a reflected laser spot on the wall. A five-parameter damped-sine fit is performed on the positional data, and the fit parameters used to calculate the Cavendish Constant (G) by two methods, along with their corresponding systematic uncertainties. The system has been tested against traditional (manual) data acquisition and analysis techniques, and agreement at the 0.2% level or better has been demonstrated.

Poster 4: **Norbertine Presence in the Crusades** 

1:00-1:30 Corinna Martell, History

2nd Floor

Fr. Andrew Ciferni, O. Praem, Director of

Mulva the Center for Norbertine Studies

2nd Floor The Crusades remain a focal point in social history due to the

implications that an extensive migration of Europeans had on what is considered the Middle East. While this interaction would inevitably transform the politics of the known world, it was driven by religious presumptions that reflected the spiritual overtones of medieval thought. Nobles and their entourages took vows to travel to Jerusalem. The clergy's primary role was to remain in Europe preaching the crusade, recruiting men to take the vow. The Premonstratensians were one of the exceptions to this rule when they reform throughout Europe and the apostolic emphasis of the Order of Prémontré provided the essential conditions that allowed for Norbertine presence in the Holy Land. I have been researching the development of monasteries in the Holy Land, crusader-religious relationships, and the reasons/goals of a Premonstratensian presence.

Flavobacterium columnare Vaccine Trial Poster 5:

1:00-1:30 BIOL 365 Immunology Class

David Hunnicutt, Associate Professor of Biology

Mulva

Flavobacterium columnare is the cause of Columnaris disease in a variety of fish. Infection assays using a zebrafish (*Danio rerio*) model system show the  $\Delta gldN$  mutant to be of greatly reduced virulence in these fish. The BIOL 365 Immunology class is testing the potential for the  $\Delta gldN$  mutant to act as a vaccine. Zebrafish were infected with the  $\Delta gldN$  mutant or sham infected and returned to holding tanks.

Following 7, 21, and 42 days these fish will be challenged.

Studio

Poster 6: Results From Three Zooplankton Sampling Techniques in Gatun

1:00–1:30 Lake, Panama Indicate Different Levels Of Effectiveness

Sean Fuss, Biology

Mulva Carrie Kissman, Assistant Professor of Biology and

Studio Environmental Science

Anindo Choudhury, Professor of Biology and Env<mark>ironmental Science Vicki Medland, Adjunct Assistant Professor Environmental Science and Policy and Associate Director, Cofrin Center for Biodiversity—</mark>

University of Wisconsin—Green Bay

The vital role zooplankton play in aquatic ecosystems is well-studied in ecological and limnological literature. Three techniques are regularly used to collect zooplankton samples in lakes; vertical tows, horizontal tows, and bucket tows. We investigated the performance and reliability of these three collection methods in Gatun Lake, Panama in winter 2015. Preliminary data indicate a significant difference between the effectiveness of each method, suggesting that vertical tows are the most effective. The results of this experiment will provide insight into the most appropriate method to use in future zooplankton studies.

Poster 7: Petrologic History of Volcán Telica, Nicaragua

1:30–2:00 Bailey Anderson, Geology 3:00–3:30 Nicolette Sheffield, Geology

Andrew Regula, Geology

Mulva Tim Flood, Professor of Geology

2nd Floor Volcán Telica, located on the northwestern coast of Nicaragua, is

the largest of seventeen active volcanoes included in the Central American Volcanic Arc. Telica formed due to the subduction of the Cocos plate under the Caribbean plate. Samples collected from the volcano were used to perform petrographic modal point count analysis in order to determine the mineralogical content of the rocks, aiding our understanding of the petrologic history of Volcán Telica. The results of this analysis indicate that all samples are highly vesicular basalt with plagioclase being the dominant mineral, as well as some olivine,

pyroxene, hornblende, and likely magnetite.

Poster 8: Learning and retention of spatial cues by

Media **zebra finches as revealed by microbehaviors and** 

Scape: **left-right discrimination analyses** 

2:00-2:30 Elizabeth Paitel, Psychology and Spanish

David Bailey, Associate Professor of Biology

Mulva Hippocampal-dependent spatial memory is commonly assessed by Studio time spent in a target arm, latency to contact a target, and number

time spent in a target arm, latency to contact a target, and number of mistakes. Recently, microbehaviors (e.g., time an animal spends orienting toward a target) by rodents in these tests have been utilized to further parse differences between treatment groups and assess orienting toward a target) by rodents in these tests have been utilized

to further parse differences between treatment groups and assess

task difficulty. We analyzed performance of zebra finches in retention trials and uncovered differences in microbehaviors and additional, explicit dependent measures that likely indicate failure to learn or orient to spatial cues. These may be effective means to further measure task difficulty and differentiate learning and memory ability in finches.

Poster 9: Petrographic analysis of samples collected from Masaya Volcano

1:30-2:00 Genevieve Vander Velden, Geology

Thanri Jooste, Geology

Shannon Fasola, Geology. Attending Miami University in Geophysics Mulva 2nd Floor

Tim Flood, Professor of Geology

The Masaya Volcano is a large shield volcano located in Nicaragua. It is composed of basaltic lavas and tephras formed due to pyroclastic eruptions. The volcano is considered to be the most active in the region with 36 eruptions since its discovery in 1524. The last lava flow occurred in 1772, notable SO2 emissions occurred in 2012. The purpose of this project is to determine the recent geologic history of the volcano using thin section modal analysis of samples collected from the side of the volcano. Preliminary results are consistent with a very gaseous, explosive origin.

Poster 10: Zooplanktivory in post-juvenile largemouth bass: Three decade

1:30-2:00 record from a small north temperate lake.

Luke Coopman. Biology

James Hodgson, Professor Emeritus of Biology and Mulva

Studio Environmental Sciences

> Largemouth bass, Micropterus salmoides, are optimal/opportunistic foragers which prey on a wide array of diet items. Over a 30 year period we examined zooplanktivory in largemouth bass on Daphnia from a small north temperate lake in Michigan's Upper Peninsula. Over the study 5,168 diets were examined. Largemouth bass are piscivores, but are planktivores in their early life history. Bionergetically zooplankton are a high cost – low benefit food item for postjuvenile largemouth bass (TL > 150 mm), yet we identified 20.7% postjuveniles (n = 1068) with Daphnia in their diet. The objective is to focus on dietary ontogeny of post-juvenile individuals examining specifically what weight class Daphnia becomes a lesser important diet item.

Women in the Drevfus Affair Poster 11:

Meredith Moore, Environmental Science and French 1:30-2:00

Tom Conner, Professor of French

Mulva The role of women in the Dreyfus Affair has been grossly understated, 2nd Floor not only as a result of lack of research but because women's opinions

and actions were not acknowledged in the public eye nor political

sphere in late nineteenth-century France. In a male-dominated drama, women such as Lucie Dreyfus, Séverine, Marguerite Durand, and Amélie Darthaut, played an allegorical and political role in the Affair. Despite their marginalization, their involvement prompted Séverine to respond to the Affair in La Fronde, the first French feminist newspaper, making of her a female equivalent of Zola, who transformed the event into an Affair.

Poster 12: Uncovering developmental pathways required

1:30–2:00 for protonephridial regeneration

Olivia Johnson, Biology

Mulva Chandler Brennan, Biology

Studio Ryan King, Assistant Professor of Biology

Regenerative medicine is a promising field aimed at treating many debilitating disorders by stimulating developmental pathways.

Understanding regeneration of a complex organ like the kidney is of particular interest, because it is the most common genetic disorder.

We have performed a screen and identified over 60 genes expressed in the primitive kidney-like system, called protonephridia, in planarians. Many of these genes have human homologs known to be expressed in the kidney. We are currently examining the function of these genes

in regeneration and excretory function.

Poster 13: A Particular Polarity

1:30–2:00 Taylor Miller, Mathematics and Economics

3:30–4:00 Marissa Hartzheim, Mathematics and Economics

John Frohliger, Associate Professor of Mathematics

Mulva In projective geometry, a polarity is a type of correlation between 2nd Floor points and lines that preserves incidence. One such correlation

associates points (a,b) in the Cartesian plane with non-vertical lines y=ax-b. We will expand on this to associate vertical lines with points "at infinity." Furthermore, we will build on this pairing to create a

duality involving curves and their tangent lines.

Poster 14: Norbertine Missions Project

2:00-2:30 Alex Gruber, History and Religious Studies

Luke Manderle, History with Secondary Education Certificate

Mulva Fr. Andrew D. Ciferni, O. Praem., Director of the

2nd Floor Center for Norbertine Studies

The Norbertine Missions project proposes to make available online documents relating to Norbertine missionary activity from 1870 to the present. This display focuses on the initial phase of this substantial, multi-year project with materials relating to a failed mission of the abbey of Grimbergen, Belgium, in the Canadian provinces of Alberta and British Columbia between 1902 and 1955. The documents

digitized in this research trip and those of the future will aid students, faculty, and the public in understanding the role played by the Norbertine Order in evangelization, immigration, and development in Brazil, the Congo, the United States, Canada, India, and South Africa.

Poster 15 Scars of War: The Psychological and Physical Traumas of War 2:00–2:30 Depicted through Art.

Corinna Martell, History

Mulva Brandon Bauer, Assistant Professor of Art

Studio

War is shattering, leaving behind gaping wounds in need of healing.

Some require bandages, other wounds are psychological and not visible. Both leave a scar. These scars are an inevitable part of the human experience. The psychological and physical ramifications of war exist as long as strife pervades. This collection of works, depicting war from the French Revolution to present day Iraq, illustrates the

scarring impact war has on the people and places within its grasp. New technology and art styles have transformed the way we see the world. We go from plate etchings in the earliest works to works responding to the impact of televised images during the Vietnam War, and photographs and abstract art responding to the recent conflicts in Afghanistan and Iraq. Regardless of what way artists choose to depict war, war remains heartbreaking, psychologically and physically destructive, leaving an imprint on the world around us.

Poster 16 Que(e)ry: LGBTQ Student Experience Survey

3:00–3:30 Jessica Wightman, Sociology

Kelsy Burke, Assistant Professor of Sociology

Mulva This study seeks to provide a better understanding of LGBTQ 2nd Floor people's experience at SNC in order to better reach out and su

people's experience at SNC in order to better reach out and support people of all sexual identities. We will distribute a survey to students that self-identify as LGBTQ to gather data specific to that population's

experience as a member of the St. Norbert community.

Poster 17: Novel secondary metabolites from endophytes

2:00–2:30 for antibiotic discovery

Katelin Selner, Biology

Mulva Katie Garber, Assistant Professor of Chemistry

2nd Floor Bacterial drug resistance is an emerging medical crisis, prompting

a need for the development of new antibiotics. One potential source of natural products that can be used to generate new drugs are endophytes, bacteria and fungi that live in the tissue of plants. Endophytes often benefit their hosts by producing secondary metabolites that can function in defense mechanisms to protect both the plant and endophyte. These natural products can be

extracted from culture and tested for activity against common bacterial

pathogens. Compounds that are produced by these unique

Poster 18: In vitro metabolism of Z-Endoxifen suggests mechanism for

2:00–2:30 in vivo presence of Endoxifen methoxycatechol

Rebecca Jackan, Chemistry

Mulva Joel Reid, Associate Professor of Pharmacology at Mayo Graduate
Studio School, Mayo Clinic Department of Oncology, Rochester, MN

4-Hydroxy-N-desmethyl-tamoxifen (Endoxifen, ENDX) is the active metabolite of the selective estrogen receptor modulator tamoxifen. The Z isomer of ENDX is in Phase I clinical trials at Mayo Clinic and NCI for the treatment of estrogen receptor positive breast cancer. Analysis of patient samples has shown the presence of a Z-ENDX methoxycatechol metabolite. The kinetic parameters of in vitro

Z-ENDX catechol formation were determined using liquid chromatography tandem mass spectroscopy to analyze human liver microsomes and CYP3A4 supersomes incubated with Z-ENDX. An in vitro mechanism was demonstrated for the formation of Z-ENDX

methoxycatechol from patients treated with Z-ENDX.

Poster 19: Effects of Flavobacterium. columnare in a Danio rerio model

2:30–3:00 infection system

Jack Roets, Biology

Mulva Connor Gullstrand, Biology
Studio Nicole Beine, Biology

David Hunnicutt, Associate Professor of Biology

Flavobacterium columnare is a gram negative bacterium that causes columanris disease in fish, resulting in morbidity and mortality in many species of fish. We are testing a gldN knockout mutant, defective in motility and secretion, in a zebrafish model. Infection with wild type *F. columnare* rapidly kills zebrafish, as does exposure to spent media from *F. columnare* cultures. The gldN knockout does not cause zebrafish death following infection or exposure to spent media. These results suggest that secretion is important in *F. columnare* virulence

and that gldN is necessary for it to properly function.

Poster 21: Characterization of fecal coliform bacteriophages isolated from 2:30–3:00 effluent water at the Green Bay Metropolitan Sewerage District

Kaitlin Schmitz, Biology

Mulva 2nd Cat Sawalski, Biology: Biomedical Science Concentration

Floor Ryan Dauman, Biology

Phil Kostka, Biology

Zach Pratt, Assistant Professor of Biology

Samples containing bacteriophages were taken from the Green Bay Metropolitan Sewerage District and analyzed. This project was started with the intentions of furthering our understanding of local viruses and their potential effects and uses. We aim to determine microbiological characteristics such as pH and heat stability, and rates of growth and attachment. Additionally we aim to sequence portions of the phage

genomes in order to identify genetically similar phages with published genomes. We worked with six phages, three that infect Enterobacter cloacae, one that infects Escherichia coli K12, and two that infects Escherichia coli B strain.

Poster 22: Technology Integration in the Elementary Classroom

2:30–3:00 Katelyn Landerman, Teacher Education

Christopher Meidl, Assistant Professor of Teacher Education

Mulva 2nd The integration of technology currently plays a vital role in the functioning of schools. Both administratively and academically,

technology influences: communication, types of learning, assessment, and logistical reports. This qualitative research was based off the phenomenology tradition. Interviews were conducted with three

teachers, and one administrator.

Poster 23: Deforestation Dialogue: Buddhist and Catholic Perspectives

2:30–3:00 Malorie Imhoff, Environmental Science

Megan Waldoch, Biology

Mulva Carrie Kissman, Assistant Professor of Biology and

Studio Environmental Science

Mara Brecht, Assistant Professor of Theology and Religious Studies

Eric Hagedorn, Assistant Professor of Philosophy

To explore the false dichotomy between science and religion, we investigate environmental ethics and the human role in earth stewardship from Buddhist and Catholic perspectives. Primary goals of this study are to explore the cooperation of the modern spiritual and philosophical views on deforestation, demonstrate how these coincide with the scientific and ecological views brought forth through scientific research and discovery, and support continuing dialogue between the different approaches of science and religion. We aim to achieve an understanding of and appreciation for separate but reliant disciplines of understanding that utilize mutual respect and critical reflection on environmental topics.

Poster 24: Chemical signaling between algae species in a Wisconsin river

3:00–3:30 Andrew Baert, Chemistry

David Poister, Associate Professor of Chemistry and

Mulva Environmental Science

2nd Floor In 2005 and 2010, *Aulacoseira granulata* and *Gleocystis planctonica* abundance was measured in the Fox River. During both summers, the

abundance of *A.granulata* increased after a bloom of *G.planctonica*, suggesting that *A.granulata* growth was stimulated by *G.planctonica*.

This hypothesis was subsequently evaluated with laboratory

experiments. In these experiments, the growth of dormant *A.granulata* was enhanced by exposure to river water collected after a bloom of *G.planctonica* and by exposure to a filtrate of *G.planctonica* 

cultures. The growth of actively growing *A.granulata* cells was unaffected by these treatments. These results support the hypothesis that *G.planctonica* triggers the rejuvenation of dormant *A.granulata*.

Poster 25: Comparison of Fish Community Assemblages in Two

3:00–3:30 Panamanian Rivers

Brennan Henricks, Organismal Biology

Mulva Colin Dassow, Organismal Biology

Studio Carrie Kissman, Assistant Professor of Biology and

Environmental Science

Species assemblage is a well-studied field in evolutionary biology. Knowing the assemblage of an area allows scientists to make predictions concerning outside influences to the unique ecosystem of any given area. In this study we analyze two years of data (2009 and 2015) collected on the species assemblage of fish in two unexploited rivers, the Rio Frijolito and Quebrada Juan Grande. Specimens were collected via seine netting and hoop netting and the number of each species captured was recorded. From this we are able to characterize the fish community assemblage of each river. This data was then compared across years as along with a literature review to compare our results with that was previously found.

Poster 27: Cannibalism in largemouth bass: Three decade record from a 3:00–3:30 small north temperate lake.

Sinai north temperate lake.

Colin Dassow, Organismal Biology

Mulva Cal Buelo, Biology, Research Technician,

Studio Department of Environmental Sciences, University of Virginia

Jim Hodgson, Professor Emeritus of Biology and

Environmental Sciences

Cannibalism persists in many populations despite the obvious negative effects. Cannibalism is well studied in fishes and much has been published on the foraging behavior of largemouth bass, Micropterus salmoides. Here we report on cannibalism in an adult population of bass over a 30 year period from a small (1.5 ha), unexploited, north temperate lake in Michigan's Upper Peninsula (46.252710°N, 86.504085°W). The focus of this study is centered on which age class of bass is most responsible for the majority of cannibalism in Paul Lake. Our large data set dilutes the effect of outliers on our results thus demonstrating a clearer picture.

Poster 28: Attributions of Obesity Stigmas and News Source in

3:00-3:30 Two Leading Newspapers in the United States and South Korea

Emily Gear, Sociology

Mulva Hyang-Sook Kim, Assistant Professor of 2nd Floor Communication and Media Studies

The worldwide increase in obesity rates calls for research about a

potential contagion of obesity stigmas via newspapers. A content analysis of two leading newspapers in the United States and South Korea found more stories with obesity stigma in the American newspaper than in Korean. Obesity-stigma news included attributions of obesity for both societal and personal levels in both newspapers. Health expert sources cancelled out obesity stigma in news stories in the Korean newspaper only.

Truncated tyrosine kinase B receptor density in female zebra Poster 29: 3:00-3:30 finches treated with the stress hormone corticosterone

Erin Bauer, Biology

Elizabeth Paitel, Psychology and Spanish Mulva Studeio

Jordan Gunderson, Biology with Biomedical Science Concentration

David Bailey, Associate Professor of Biology

Acute and chronic stress positively and negatively affects memory in vertebrates. In this study, adult female zebra finches received a surgically-implanted pellet of the stress hormone corticosterone. Three days later, an increased rate of acquisition in a spatial memory test was exhibited relative to controls. As short-term stress increases brain-derived neurotrophic factor (BDNF) levels and promotes synaptic growth, we measured cells positive for a truncated form of the BDNF tyrosine kinase B receptor in the hippocampus, a structure central to spatial memory. Levels of this receptor may provide additional evidence as to the mechanism of corticosteroneinduced increases in memory function.

Poster 30: Determining atomic temperatures using laser absorption

3:00-3:30 Grace Schwantes, Physics

Erik Brekke, Assistant Professor of Physics

Mulva The absorption of laser light through a cell can be used to determine atomic temperatures. Specifically, we compare the absorption of 780 Studio nm light on and off resonance of the Rb87 F=2→ F'=3 transition over

various temperatures. The absorption ratios and the known room temperature density are used to derive a theoretical curve for atomic temperature. This is compared to the surface temperature of

the heated cell. We observed the temperature of the cell's surface to be higher than the inside atomic temperature.

Poster 31: Effects of Vocal and Instrumental Music on Immediate Serial

3:00-3:30 Recall

Kelly Brofka, Biology: Biomedical Science

Katie Flesch, Biology Mulva

Stuart Korshavn, Associate Professor of Psychology 2nd Floor

> Short-term memory may be impaired by background stimuli such as speech, irrelevant sound, or music. This study tested the hypothesis

that vocal music would cause more serial recall errors than

instrumental music, which would cause more errors than silence. Participants viewed sequences of nine digits under three conditions (silence, instrumental, and vocal music), followed by recall periods during which they attempted to write the sequence in order. Vocal music caused more serial recall errors than silence and marginally more errors than instrumental, suggesting that vocal stimuli impair the phonological loop of short-term memory and may decrease overall cognitive performance.

Poster 32: Composition of El Hormigon Cinder Cone Near

3:00–3:30 Granada, Nicaragua

Matt Larson, Geology and Environmental Science

Mulva Billy Nikolai, Geology

Studio Tim Flood, Professor of Geology

El Hormigon is a cinder cone volcano located in Nicaragua. It is a part of the Maribios volcanic chain that trends approximately north/south due to subduction of the Cocos plate beneath the Caribbean plate. Five samples were collected from the volcano which is exposed as a near cross section due to mining activity. In the laboratory, rock compositions were determined by point count analysis of thin sections. Compositionally, the rocks are basalt and further categorized texturally as highly vesicular scoria. Samples exhibited high percentages of matrix and vesicles; with minor amounts of crystals including olivine, plagioclase, hornblende, and pyroxene.

Poster 33: Examining the Relationship between Motivations of Mobile

3:00–3:30 Check-ins and User Privacy Concerns

Nichole Wierzba, Communication and Media Studies

Mulva Hyang-Sook Kim, Assistant Professor Communication and

2nd Floor Media Studies

Given the popularity of checking in at a location via mobile phone, little research has examined germane motivations tied to check-in as a form of in-group electronic word-of-mouth, and related concern of privacy. A survey with 174 college students found mixed relationships between motivations of location check-in and students' privacy

concerns online. Students' competence and involvement with mobile phone use showed mixed relationships with check-in motivations as

well. Details of the findings and implications were discussed.

Poster 34: Would You Care If You Are Eventually Locked Up? The Use of

3:00–3:30 Legal Enforcement as a Normative Element to Prevent Texting

While Driving

Mulva Nikki Geiser, Communication and Media Studies

2nd Floor Hyang-Sook Kim, Assistant Professor of Communication and

Media Studies

Despite the implementation of banning texting while driving (TWD) in

more than 40 states in the United States, this policy has not appeared to be successful. The lack of proper publicity about the implementation may explain this deficit. The current research extends previous investigations regarding the impact of perceived norms on engagement in TWD by adding a legal norm as the highest form of social norm. An online experiment with a 3 (state: Wisconsin vs. vs. Florida vs. South Carolina) X 3 [message: peer norm (PN) vs. legal enforcement (LEF) vs. behavioral control (BC)] X 2 (time: pre vs. post) mixed factorial design (N = 205) found that the message with a focus of LEF changed perceived legal consequences, which was pronounced for SC. Furthermore, the LEF message was more effective than the PN message in reducing positive attitudes toward TWD and behavioral intention, but not for WI and FL.

Poster 35: Analysis of volcanic rocks extracted from

3:00–3:30 Cerro Negro volcano, Nicaragua

Quinn Bukouricz, Geology

Mulva Tim Flood, Professor of Geology

Studio Cerro Negro volcano is located in Nicaragua on the southernmost

portion of the Marrabios Range. It is a cinder cone volcano with a height of about 500 meters, and is Central America's youngest volcano, first erupting in 1850. It is also one of the most active volcanoes in the region, most recently erupting in 1999. In this study, field samples were collected and thin sections prepared in order to perform a point count analysis of the mineralogy and determine the texture. Analysis of the data indicates that the lava produced at this

volcano is basaltic in composition and highly vesicular.

Poster 36: Zombies in Popular Media: An Analysis of Zombie Popularity

3:00–3:30 **Between Genders** 

Stephaine Villanova. Communications with Media Studies Emphasis

Mulva Mark Glantz, Assistant Professor of Communication and

Studio Media Studies

Zombies increased in popularity in films, graphic novels, fiction, and the gaming industry. Perhaps audiences find zombie media increasingly appealing is because they can relate to the characters more than a James Bond character or an alien super hero like Superman. Perhaps they are enjoyed because it is rumored that zombies serve as a metaphor for societal problems. Or maybe viewers simply enjoy watching their least favorite character ripped apart by flesh-eating drones. These are just some of the variables researchers believe have caused zombies to be popular. There are a few factors that deal with gender that are particularly interesting. A survey was created to investigate the variables related to appreciation

(or lack thereof) of zombie media and culture through social science methods.

Poster 37: Investigating Memory Accuracy From a Visual or Written

3:30–4:00 Stimulus with Suggestive Wording

Amanda Arnold, Psychology

Mulva Stephanie Weigman, Psychology

2nd Floor Gaby Garcia, Psychology

Sarah Jones, Visiting Assistant Professor of Psychology

The effect of suggestive wording on an individual's recall of events has been shown to be powerful. However, the presentation of the event has not been explored in depth. The present study tested the hypothesis that method of stimuli presentation and the use of suggestive wording affect reported accuracy for the recall of the traumatic event. A group of 12 St. Norbert College students volunteered to be exposed to a traumatic car crash in either a video format or an equal reading passage format. Contrary to the hypotheses, it was found that participants who were exposed to the reading passage format did not show a marked increase in reported accuracy of the traumatic event relative to those given the video format. Furthermore, the suggestive wording effect was not observed either. However, the reported average speeds of the vehicles were significantly different, regardless of format or suggestive wording used. In the discussion, the limitations of this study and the theoretical implications of these data are examined.

Poster 38: Reducing algal blooms in Dream Lake: Algal and zooplankton 3:30–4:00 seasonal dynamics indicate combined response to food web manipulation and winter kill event

Mulva Cole Brennan, Biology 2nd Floor Kristin Kniech, Biology

Carrie Kissman, Assistant Professor of Biology and

Environmental Science

James Hodgson, Professor Emeritus of Biology and

Environmental Science

We implemented a combined top-down trophic cascade, and a bottom-up reduction of fertilizer inputs to reduce algal bloom frequency and increase recreational and aesthetic value in Dream Lake, a small water body in Brown Co, WI. Baseline pre-manipulation data were collected in 2012, fingerling largemouth bass were stocked in October 2012 and 2013, a winterkill occurred in 2014, and post-manipulation data were collected in 2013 and 2014. Increased transparency, decreased algal biomass, and increases in zooplankton biomass and length in 2014 indicate that Dream Lake may be responding to the combined top-down manipulation and

2014 winterkill event.

Poster 39: The effect of allelopathic compounds from garlic mustard 3:30–4:00 (Allaria petiolate) and bracken fern (Pteridium aquilinum)

on the viability of human cell lines

Mulva David Holzer, Biology

Studio John Grady, Biology with Biomedical Science Concentration

Steve Young, Biology

Mitchell Ledwith, Biochemistry

Russ Feirer, Associate Professor of Biology

Bracken fern (Pteridium aquilinum) has genotoxic effects in human gastric cells. Frond extracts induce apoptosis and cell cycle arrest in certain cancer cell lines, while leaving non-cancerous cells relatively unaffected. This work reproduces the findings of Roudsari et al. and compares the cytotoxicity of frond and rhizome extracts of Pteridium aquilinum. Garlic mustard (Alliaria petiolate) also contains allelopathic compounds. Hexane, methanol, and water extracts of both species were prepared and tested for their effects on the human cancer cell lines MDA-231 and MCF-7. Cell viability was measured using

CTB viability.

Poster 40: Research Experience in Panama 2015

Digital Erin Bauer, Biology

Screen Colin Dassow, Organismal Biology

3:30–4:00 Sean Fuss, Biology

Brennan Henricks, Organismal Biology

Mulva Carrie Kissman, Assistant Professor of Biology and

Studio Environmental Science

Anindo Choudhury, Professor of Biology and Environmental Science Vicki Medland, Adjunct Assistant Professor Environmental Science and Policy and Associate Director, Cofrin Center for Biodiversity,

University of Wisconsin—Green Bay

Students from St. Norbert College and University of Wisconsin-Green Bay embarked on an intensive sixteen-day tropical ecology research course in Panama in early January 2015. Mangrove, coral reef, rainforest, and freshwater ecosystems offered unique opportunities for

students and faculty alike to acquire field research experience. We explored in depth the prevalence of the Asian fish tapeworm (Bothriocephalus acheilognathi) in native fishes and zooplankton in Gatun Lake and its tributaries, we compared fish species diversity between two rainforest streams, and we tested the effectiveness of novel equipment for the observation and collection of tropical

moth species.

Poster 41: Bioinspired dyes from boron difluoride complexes

3:30–4:00 Erin Lang, Biochemistry

Kurstan L. H. Cunningham, Assistant Professor of Chemistry

Mulva Studio The fluorescent labeling of nucleotides, amino acids and numerous other biological molecules using boron derivatives (BODIPY) is a well-known method for improving detection limits. Our current project is to create new BODIPY-like dyes based on a keto-phenolate core, such as with 2-hydroxybenzophenone and derivatives. Preliminary results reveal that these compounds emit in both solution and solid state, as designed. The emission from the complex was found to be sensitive to the type of substituents on both the phenol-side and the ketone-side of the complexes.

Poster 42: Indole based structural analogs of modafinil inhibit the

3:30–4:00 dopamine transporter

Katie Flesch, Biology

Mulva *Cynthia Ochsner, Assistant Professor of Chemistry*Studio Modafinil is a wake promoting agent that binds presynaptic

dopaminergic neurons and increases extraneuronal dopamine (DA) likely by acting as a partial substrate for the dopamine transporter (DAT). Previous results from our lab, using rotating disc electrode voltammetry (RDEV) in a suspension of human embryonic kidney cells stably expressing the human dopamine transporter (HEK-hDAT), showed modafinil is a competitive inhibitor of DAT and thus binds to the same site as DA and thus modafinil should be classified as an amphetamine-like substrate. We also reported that an in-house synthesized structural analog of modafinil, (2-[(diphenylmethyl) sulfenyl] isopropylamide, also inhibits DAT but in an uncompetitive manner and thus exhibits cocaine-like or classic inhibition. Here we have synthesized two indole based analogs, [indole sulfenyl] isopropylamide and [N-methylindole sulfenyl] isopropylamide to determine whether they are inhibitors (cocaine-like) or subrates (amphetamine-like) of DAT. For this assay rates of dopamine inward transport in the presence of an inhibitor are measured using RDEV and are fitted to mathematical models to determine the mechanism of inhibition.

Poster 43: Women in Leadership

3:30–4:00 Mara Aparnieks, Middle Childhood/Early Adolescent Education

Corday Goddard, Associate Dean of Student Development

Mulva

The project focuses on the factors that lead to women having a lower perception of their own individual leadership and confidence, relating to a previous study done by CIRCLE: The Center for Information and

Research on Civic Learning and Engagement. In an article entitled, "Civic Engagement and Political Leadership among Women," CIRCLE discusses trends, in which as women gain more leadership, they often

in which as women gain more leadership, they often perceive themselves with less ability than men of the same genre. Through interviews and surveys, we asked women on the St. Norbert Campus their views on these findings, searching for possible solutions we can implement on campus.

Poster 44: The effect of resveratrol combined with dichloroacetate (DCA)

3:30-4:00 on human cell lines.

Sarah Piepenbrink, Biology

Mulva Daniel Sisler, Biology

Russ Feirer, Associate Professor of Biology Studio

> Resveratrol reduces viability in cancer cell lines and has anticancer properties in animals. This study examined combinations of resveratrol with DCA, a compound that affects mitochondrial metabolism (reversing the Warburg Effect), to determine if DCA might sensitize cancer cells to other chemotherapeutic compounds that affect glucose metabolism, such as resveratrol. Westernblots were used to estimate levels of several proteins, including cleaved PARP and p21. Resveratrol and DCA were found to reduce cell viability. Resveratrol, but not DCA, was found to induce caspase-3,7,

> a measure of apoptosis. This suggests that resveratrol and DCA may

affect viability via different mechanisms.

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## NOTES



