MORAVIAN COLLEGE

The 13th Annual Student Scholarship and Creative Endeavors Day

April 17, 2018

This year, 61 students, representing 22 different areas of study, are participating in the 2018 Scholars Day activities. Congratulations to these student scholars for all of their accomplishments, and many thanks to their 33 faculty sponsors. Since the inception of this event 13 years ago, 827 students have shared their scholarly accomplishments with the Moravian College community.

For the first time, we invited students to submit proposals under the InFocus theme. Seven students are presenting research that is consistent with one of the 4 InFocus themes: Poverty & Inequality, Sustainability, War & Peace, and Healthcare. For additional information on the InFocus Program, see https://www.moravian.edu/infocus.

The 13th Annual Student Scholarship and Creative Endeavors Day is celebrated in memory of and in honor of:

Dr. Frank Kuserk
(1951-2017)

Professor of Biology
Director, Environmental Studies & Sciences Program

By Jennifer Francesco '17

Dr. Frank Kuserk embodied the ideal of a Moravian College professor. He loved his research and his academic discipline, but he always put his students first. He was the kind of man who would selflessly spend so much of his time looking for opportunities for his students. I know because I was one of them. I can proudly say that I credit most of my accomplishments to Dr. Kuserk's mentoring and guidance.

Everyone who knew Dr. Kuserk saw that he had a great passion for working at Moravian. He could always be seen heading out to the field with a huge smile on his face. He proudly talked about his former students, and it was clear that he had made an impact on them. I will always treasure the endless stories Dr. Kuserk would tell, whether they were about his time in college, an experience out in the field, or a quick history lesson on the American Revolution.

From the time I conducted research with him in the summer of 2015 to just last year when he was my supervisor for student teaching, he dedicated so much time helping me grow and achieve more than I ever thought possible. In that time, I completed two additional research projects, one funded by the National Science Foundation, and presented my work at several conferences. Dr. Kuserk helped me along every step of my journey, from finding and applying for opportunities, preparing me for them, and helping me reflect on the experience afterward. He was always a mentor for me, through whatever challenge I faced.

Dr. Kuserk's legacy at Moravian College encompasses all of his work, the people he influenced, and the students he inspired.

A couple weeks before I graduated, he was with me as I finished a lab that he helped me prepare for my student-teaching placement. It didn't go as planned, but I will never forget what he told me at the end of the class:

"You'll do great things one day," he said with a wink and a smile on his face. "It's because you're my student."

The 13th Annual Moravian College Undergraduate Student Scholarship and Creative Endeavors Day
April 17, 2018

MORAVIAN COLLEGE

Schedule of Events

8:50 a.m.	**Welcome and Opening Remarks** *Haupert Union Building, UBC Room*
8:55 a.m. – 10:05 a.m.	**Session I: HUB, UBC Room, Oral Presentations**
10:20 a.m. – 11:10 a.m.	**Session II A: HUB, UBC Room, Oral Presentations**
10:20 a.m. – 11:10 a.m.	**Session II B: HUB, Snyder Room, Oral Presentations**
11:45 a.m. – 12:55 p.m.	**Session III: HUB, UBC Room, Oral Presentations**
11:45 a.m. – 12:45 p.m.	**Student Poster Presentations I** *Haupert Union Building, Gallery*
1:10 p.m. – 2:25 p.m.	**Session IV A: HUB, UBC Room, Oral Presentations**
1:10 p.m. – 2:25 p.m.	**Session IV B: HUB, Snyder Room, Oral Presentations**
2:35 p.m. – 4:00 p.m.	**Session V A: HUB, UBC Room, Oral Presentations**
2:35 p.m. – 3:45 p.m.	**Session V B: HUB, Snyder Room, Oral Presentations**
4:00 p.m. – 5:00 p.m.	**Student Poster Presentations II** *PPHAC ATRIUM*

4:00 p.m. Reception (all welcome), PPHAC ATRIUM

Acknowledgements

The 13th Annual Moravian College Student Scholarship and Creative Endeavors Day would not have been possible without the commitment of many people at Moravian College.

In addition to all of the participating students and faculty listed in this program and all other faculty and students who collaborated on research projects this year, we would like to acknowledge the contributions of the following individuals and offices:

The Rokke Endowment for Student Research and The SOAR Program

President Grigsby and the President's Office

Moravian College Honors Program

The HUB Management Staff

Jan Ciganick, Art Department

Food Services and Facilities Management

The 13th Annual Moravian College Undergraduate Student Scholarship and Creative Endeavors Day

Program Overview

Note: Please try to attend each oral presentation session in its entirety.

8:50 AM: Opening Remarks – HUB, UBC Room

SESSION I

Oral Presentations
Session I: Moderator – Dr. Brenna Curley
HUB, UBC Room

8:55 AM	Rachel Myers	Physics and Mathematics	Dr. Shannon Talbott
	Exploration of Potential Energy Functions of the Four Triplet Pi Electronic State of NaCs		
9:20 AM	Brittany Strausser	Mathematics	Dr. Brenna Curley
	Determining College Success Based on High School Performance: Fitting Linear Mixed Models		
9:45 AM	Eric Yeakel	Religion, History	Dr. Kelly Denton-Borhaug
	The Nature of the Cross and Salvation in Twenty-First Century Christianity		

SESSION II A

Oral Presentations
Session II A: Moderator – Dr. Carolyn Mitten
HUB, UBC Room

10:20 AM	Steven Berger	Mathematics Education	Carolyn Evans
	Do You Speak the Language? Teaching ELLs Mathematics		
10:45 AM	Jessica Hergenrother	Education	Dr. Jean DesJardin
	Multi-sensory Phonics Intervention for Students At-Risk for Reading Development		

SESSION II B

Oral Presentations
Session II B: Moderator - Dr. Daniel Jasper
HUB, Snyder Room

10:20 AM	Abigail Conage	Sociology and Anthropology	Dr. Debra Wetcher Hendricks
	Reverse Discrimination in Nursing		
10:45 AM	Bettyjo LaBare	Sociology and Anthropology	Dr. Akbar Keshodkar
	Tourism and Poverty: The Effects of Rural Tourism on Homeless and Impoverished Communities on The Oregon Coast		

SESSION III

Oral Presentations
Session III: Moderator - Dr. Michael Bertucci
HUB, UBC Room

11:45 AM	Jonathan Nadraws	Chemistry	Dr. Michael Bertucci
	Optimizing Cyclization of LamD Derivatives in Preparation for Bioassays of Lactobacillus Plantarum		
12:10 PM	Shane Hansen	Religion	Dr. Jason Radine
	The Jewish American Immigrant Experience and the Superhero Genre		
12:35 PM	Molly Lokitis, Erika Salus	Peace & Justice Studies	Dr. Kelly Denton-Borhaug
	Peace Education Film (Digital Research Project)		

SESSION IV A

Oral Presentations
Session IV A: Moderator - Dr. James Scifers
HUB, UBC Room

1:10 PM	Michelle Pomposello	Biology	Dr. Kara Mosovsky
	The Effect of the Dietary Antioxidant Seleno-L-Methionine (SeMet) on Burkholderia Thailandensis Infected Macrophages		
1:35 PM	Pablo Ramos	Health Science	Dr. Jennifer Ostrowski
	Psychological and Sociological Effects On Concussions		
2:00 PM	David Rice	Health Science	Dr. Jennifer Ostrowski
	The Inclusion of Kinesio Tape Into Our Society		

SESSION IV B

Oral Presentations
Session IV B: Moderator - Dr. Jane Berger
HUB, Snyder Room

1:10 PM	Chris Brennan	History	Dr. Heikki Lempa
	Life Histories: Methodology and Tool for Moravian Biographies		
1:35 PM	Alicia Wallace	Ethics	Dr. Bernie Cantens
	The Flaws of Error Theory		
2:00 PM	Natalie H Lukehart	Education	Dr. Tristan Gleason
	Methods and Protocols in Place for Refugee Students in the Lehigh Valley		

SESSION V A

Oral Presentations
Session V A: Moderator - Dr. Bernie Cantens
HUB, UBC Room

2:35 PM	Alona Struk	English	Dr. John Black
	Evolution of Syntax in English: From Free to Rigid Word Order		
3:00 PM	Christine Wieder	English	Dr. John Black
	A Constructive Invasion of the English Language		
3:25 PM	Ellyce Nieves, Alicia Pisano	English	Dr. Joyce Hinnefeld
	Writing as Activism: Reflections and Writings from a Fall 2017 Moral Life Course at Moravian College		

SESSION V B

Oral Presentations
Session V B: Moderator - Dr. S. Dunham
HUB, Snyder Room

2:35 PM	Monica Richardson	Biochemistry	Dr. Stephen Dunham
	The Medicinal Biochemistry of Bile and The Formation of Gallstones (InFocus Themed Research)		
3:00 PM	Kayla Troutman	Biochemistry	Dr. Anastasia Thévenin
	Is Phosphorylation a Requirement For Src Recruitment to the Cx43 C-terminus?		
3:25 PM	Katelyn Morrison	Biology	Dr. Shari Dunham
	Impact of Signage on First Year Residence Hall Recycling (InFocus Themed Research)		

POSTER SESSION I

11:45 AM - 12:45 PM
Poster Presentations I
HUB

Students		Advisor
Paige Weiss	Health Science	Dr. Jennifer Ostrowski
A Sociological, Psychological, and Economical Approach at Influenza Vaccinations		
Savannah Smith	Health Science	Dr. Jennifer Ostrowski
The Effects of the Opioid Epidemic		
Rachelle Antoine	Health Science	Dr. Jennifer Ostrowski
Depression in Impoverished Mothers and Families (InFocus Themed Research)		
Kelly Burke	Health Science	Dr. Jennifer Ostrowski
Ethical Dilemmas in Mentally Ill Prisoners		
Breonna Duckworth	Health Science	Dr. Jennifer Ostrowski
Mental Illness and its Impact on Recovery		
Maggie Heft	Health Science	Dr. Jennifer Ostrowski
Does Gender Affect the Rate of ACL Recovery?		
Kyle Froehlich, Dan Gerrity	Biology	Dr. John Bevington
Using Stable Isotope Analysis to Study the Exchange of Nutrients between Myrmecophytes and their Mutualistic Ants in an Amazon Rain Forest		
Beth Davies, Aaron Hudson	Public Health	Dr. James Teufel
Sociolegal Needs in the Lehigh Valley (InFocus Themed Research)		
Benjamin Seitz	Neuroscience	Dr. Cecilia Fox
Effects of Personalized Music on Cognition in Dementia Patients: The Music and Memory Pilot Study		
Kylie Chichura	Chemistry	Dr. Michael Bertucci
The Effects of Multiple Amino Acid Mutations of a Key Quorum Sensing Peptide, CSP-1.		
Ashlyn Cantrel	Chemistry	Dr. Michael Bertucci
Synthesis of Lactam Derivatives of LamD, a Cyclic Signaling Peptide of Lactobacillus Plantarum		
Leanna Talotta-Altenburg	Biochemistry	Dr. Christopher Jones
CRISPR Mediated Mutation in Drosophila Melanogaster Embryos Using Electroporation		
Morgan Hresko	Chemistry	Dr. Stephen Dunham
Synthesis of a Bimetallic Compound for DNA Binding Studies		
Lauren Bertucci	Marketing	Dr. Gary Kaskowitz
The Effect of Interior Packaging Color on the Perceived Taste and Healthiness of Food		
Ana Bustamante, Miles Lizak	Biochemistry	Dr. Shari Dunham
DNA Binding Rates of Novel Rhodium Compounds		

Ariana Caiati	Biochemistry	Dr. Shari Dunham
Interstrand Cross-Linking of a DNA Duplex by Rhodium Complexes		
Lauren Caronia	Chemistry	Dr. Stephen Dunham
Synthesis, Characterization, and DNA-Binding of a Novel Rhodium Complex		

POSTER SESSION II

4:00 PM - 5:00 PM
Poster Presentations I
PPHAC Atrium

Students		Advisor
Adel Mohammad Sharif	Biology and Environmental Science	Dr. Daniel Proud
Assessment of the Ecological Succession of the Lehigh Gap Nature Center		
Catalina Perez	Biology	Dr. Joshua Lord
The Effects of Dams on Water Quality in the Lehigh River Watershed		
Julianne Shino	Public Health	Dr. Jennifer Ostrowski
Intellectual Disability: How a Down Syndrome Child View the World Differently Than How the World Views a Down Syndrome Child		
Leauna Schaner	Rehabilitation Science	Dr. Jennifer Ostrowski
Sport-Related Concussions in Adolescent Athletes from Multiple Perspectives		
Beth Davies	Health Science	Dr. Jennifer Ostrowski
Benefits of Occupational Therapy in Alzheimer's and Dementia Patients (InFocus Themed Research)		
Brandon Percey	Health Science	Dr. Jennifer Ostrowski
Traumatic Brain Injuries: Understanding the Mechanism of Injury, Psychological Impact and Rehabilitation/Preventative Interventions for Adult Athletes (InFocus Themed Research)		
Bethany Skrapits	Health Science	Dr. Jennifer Ostrowski
Elder Abuse in People with Dementia		
Maria Peralta, Aldana Sanchez-Arias	Psychology	Dr. Robert Brill
The Effect of Racial Minority versus Racial Majority Group Divisions on Social Comfort in Intergroup Interaction		
Robert Hillman	Chemistry	Dr. Michael Bertucci
Regulation of Quorum Sensing in S. Pneumoniae By Making Iterative Substitutions to the Hydrophobic Face of the Competence-Stimulating Peptide CSP-1		
Madison Pursell	Chemistry	Dr. Alison Holliday
Derivatization of 6-acetylmorphine and Norfentanyl for GC-MS Analysis		
Melissa Cheong	Biology	Dr. Kara Mosovsky
Determining Differences in Antibiotic Resistant Escherichia coli between Conventional and Kosher Chicken Breast		
Inderjit Sandhu	Biochemistry	Dr. Stephen Dunham
Synthesis of Novel Dirhodium Compounds		
Nathan Arnold	Economics	Dr. Sabrina Terrizzi, Dr. Eva Marikova Leeds
Does the Minimum Wage Affect the High School Graduation Rate?: An Examination of Western Pennsylvania and Eastern New Jersey		
Carol Hanna	French	Dr. Joanne McKeown
Imagination and Dreams: Overcoming Hardship in Gisèle Pineau's Novels for Young Adults		

Nathan Jordan	Biology	Dr. Frances Irish
Snout Elevation During Predatory Strikes in Pythons		
Maria Manz	Environmental Science	Dr. Joshua Lord
Effects of Ocean Acidification on Predator Prey Relationships		
Joseph Hall	Music	Dr. Joy Hirokawa
Choral Village		

Student Oral Presentations I
HUB, UBC Room
8:55 - 10:05 AM

Moderator: Dr. Brenna Curley

Title: **Exploration of Potential Energy Functions of the Four Triplet Pi Electronic State of NaCs**
Students: Rachel Myers
Advisor: Dr. Shannon Talbott
Location: HUB, UBC Room 8:55 AM - 9:10 AM

One area of research in physics is determining the potential energy of diatomic molecules, which can be used to describe the interaction of the particles and analyze other properties of these systems. This information has applications for Ultracold atoms, which are investigated for uses in quantum computing due to their unique properties. Under consideration in this work is the diatomic molecule NaCs, for which we have experimental data obtained by collaborators at Susquehanna University. The four triplet pi electronic state of NaCs has a complicated potential structure with a double well. This work explores functional forms that have physical interpretations to map these double well energies. Mapping these energies allows us to predict higher electronic energies and eventually determine a Hamiltonian function that can be used to perform other calculations. In determining this functional form, two approaches were explored. The first considered the double well electronic state as a superposition of simple, standard single well forms with a transition dipole moment represented by a switching function. The current is using a Spline Exponential-Morse Long Range potential function determined using the program betaFIT.

Title: **Determining College Success Based on High School Performance : Fitting Linear Mixed Models**
Students: Brittany Strausser
Advisor: Dr. Brenna Curley
Location: HUB, UBC Room 9:20 AM - 9:35 AM

The challenges for liberal arts colleges are immense. A common area of study revolves around monitoring the challenges college Admission Offices face in order to ensure the retention rate either rises or, at the very least, remains the same. Using data from Moravian College, we propose linear mixed effects models to describe the effects of high school Grade Point Average (GPA), SAT composite scores, and Gender on college GPA while we additionally account for differences between high schools. We find high school GPA, SAT composite scores, and gender significant for all high school students when predicting college success as measured by college GPA, while only high school GPA and SAT composite scores are significant for students who attended a high school close to Moravian College.

Title: **The Nature of the Cross and Salvation in Twenty-First Century Christianity**
Students: Eric Yeakel
Advisor: Dr. Kelly Denton-Borhaug
Location: HUB, UBC Room 9:45 AM - 10:00 AM

The New Testament makes it clear that the message of salvation through Jesus' death on the cross is paradoxical, creating a sense of mystery, and requires a wide variety of metaphors and images to understand it, creating a sense of depth. It is this sense of mystery and depth, furthermore, that helps to give the message of salvation its power within Christian theology. In the modern church however, the mystery and depth within the message has been pushed to the side and forgotten. Christians no longer seem to wrestle with the cross's paradoxical nature nor do they seem to acknowledge the wide variety of atonement images in the New Testament. With all this being said, in order for the Christian message of salvation to regain its incredible power in the modern church, the same kind of power it held for the earliest Christians, the sense of mystery produced by the paradoxical nature of the cross and the sense of depth produced by the wide variety of images and metaphors used to describe its significance in the New Testament must be recovered.

Student Oral Presentations II A
HUB, UBC Room
10:20 – 11:10 AM

Moderator: Dr. Carolyn Mitten

Title: **Do You Speak the Language? Teaching ELLs Mathematics**
Students: Steven Berger
Advisor: Carolyn Evans
Location: HUB, UBC Room 10:20 AM - 10:35 AM

In many urban public schools, English Language Learners (ELLs) from many cultural backgrounds make up a significant percentage of the student body. In order to succeed in their academics, these students face the dual challenge of learning the English language and regular academic content. In this talk, we will discuss specific challenges ELLs in local schools are facing and discover strategies to help them learn mathematics. We can only be sure we are educating our students if we know they understand how we communicate.

Title: **Multi-sensory Phonics Intervention for Students At-Risk for Reading Development**
Students: Jessica Hergenrother
Advisor: Dr. Jean DesJardin
Location: HUB, UBC Room 10:45 AM - 11:00 AM

This project looked at how the Home Literacy Environment and intensive, multi-sensory reading intervention affected student academic achievement in reading. Through my research, I found evidence-based multi-sensory reading practices to incorporate into our six week reading clinic held at Moravian during the summer for at-risk elementary students. These practices were formulated into skill-based interventions for PA/phonics, which I implemented alongside other teachers/specialists working the clinic. We gathered reading achievement scores pre/post clinic from assessments such as CORE, PAST, and DRA. These scores were analyzed alongside results from Dr. DesJardin's Home Literacy Survey for parents of attending students to see the relationship these factors had with student reading achievement.

Student Oral Presentations II B
HUB, Snyder Room
10:20 - 11:10 AM

Moderator: Dr. Daniel Jasper

Title: **Reverse Discrimination in Nursing**
Students: Abigail Conage
Advisor: Dr. Debra Wetcher Hendricks
Location: HUB, Snyder Room 10:20 AM - 10:35 AM

This honors research project investigates the extent of discrimination against male nurses. Recent increases in the numbers of male nurses have challenged public perceptions of females, not males, as caregivers. According to Men in Nursing Occupations, "Men's representation in nursing has been growing since the 1970's" (U.S. Census Bureau). In 2011, there were 3.5 million employed nurses, 3.2 million whom were female and 330,000 male. Compared to the only 2.7 percent of registered nurses who were men in 1997, the 9.6 percent who were male in 2011 represented a substantial increase. However, attitudes about males in the nursing profession have not necessarily changed. The degree to which male nurses encounter obstacles related to public perceptions of them, similarly to women entering the workforce did years ago, deserves attention.

Title: **Tourism and Poverty: The Effects of Rural Tourism on Homeless and Impoverished Communities on The Oregon Coast**
Students: Bettyjo LaBare
Advisor: Dr. Akbar Keshodkar
Location: HUB, Snyder Room 10:45 AM - 11:00 AM

Over the past several decades, tourism has become a globally flourishing industry that many communities are taking part in. Cities throughout the Pacific coastline are mainly rural tourist destinations, and the community dynamics of these areas often undergo significant changes. This project was designed to see if the operation of tourism has a significant impact on poverty and homelessness. During the 12-week time frame on the Oregon Coast, Bettyjo LaBare and Dr. Keshodkar worked alongside researchers with the Oregon Sea Grant to collect and analyze public social media posts to search for definitive traits of locals and tourists. Participant observation and analysis were also used to examine different parts of town and their purpose for tourists, locals, and homeless individuals. Through these methods of research, it was found lack of access to housing, mental healthcare, and stable jobs appeared to be the most prominent issues. Field observations throughout different areas of town displayed a clear separation between local and tourist spaces as well as the invisibility of poverty within spaces that drew visitors. Even with the short time frame, the researchers were able to distinguish connections between the growing tourism industry and impoverished and homeless communities within the town.

Student Oral Presentations III
HUB, UBC Room
11:45 - 12:55 PM

Moderator: Dr. Michael Bertucci

Title: **Optimizing Cyclization of LamD Derivatives in Preparation for Bioassays of Lactobacillus Plantarum**
Students: Jonathan Nadraws
Advisor: Dr. Michael Bertucci
Location: HUB, UBC Room 11:45 AM - 12:00 PM

Quorum sensing (QS) is an inter-bacterial communication system used to coordinate group gene expression. In the commensal bacteria Lactobacillus plantarum, this system has been shown to control cell adherence and bacteriocin production. The chemical signal in L. plantarum's QS circuitry is a 5 amino acid cyclic peptide called LamD. The aim of this research is to make chemical modifications to LamD to upregulate its QS activity, potentially leading to therapeutic agents that take advantage of L. plantarum's beneficial effects on human health, such as lowering LDL cholesterol levels and relieving the symptoms of irritable bowel syndrome. In the lab, solid-phase peptide synthesis was used to make linear peptides, and a variety of solution-phase cyclization conditions were screened to find a time and resource efficient procedure. From these efforts, a streamlined and high-yielding synthesis was devised that is now routine for creating LamD and its derivatives. Currently, these derivatives are being synthesized in preparation for an alanine scan of LamD, which will determine which of its residues are crucial to the QS activity of L. plantarum.

Title: **The Jewish American Immigrant Experience and the Superhero Genre**
Students: Shane Hansen
Advisor: Dr. Jason Radine
Location: HUB, UBC Room 12:10 PM - 12:25 PM

The Eastern Ashkenazic immigration wave of 1880-1920 would bring forth the pioneers of the superhero genre. Most of the first generation children of these immigrants had to live a life in the traditions of Judaism, but also the globalized society of America. Comic writers and artists such as Stan Lee, Bill Finger, and Jerry Siegel are some of these first generation Jewish Americans that learned to live in both worlds. The question must then be asked, how much of the superhero genre can be accredited Jewish immigrant American experience? The purpose is to explore the elements of the

superhero genre that shows evidence of Jewish influences, while not necessarily showing or admitting how much is representing Judaism.

Title: **Peace Education Film (Digital Research Project)**
Students: Molly Lokitis, Erika Salus
Advisor: Dr. Kelly Denton-Borhaug
Location: HUB, UBC Room 12:35 PM - 12:50 PM

Our summer SOAR project was to create a short film on peace education. We began our project by discussing what peace meant to us and creating our own ideas of peace. We continued by reading two books, Understanding Peace and A Non-killing Paradigm to help provide us with a better understanding. We then moved forwarded by researching other colleges in the area to see if they had a peace and justice major/minor like Moravian College. We watched student made films on ideas of peace, we attended committee meetings with LEPOCO Peace Center and attended protests and peace camp. Overall, we aimed to appeal to an audience of our age to project the ideas of peace within oneself and peace within others, the hope for equality, fight for justice, and in the end to hopefully inspire a group of people to go forth and use the ideas/information we have suggested. Peace education is not something significantly talked about but should be with the hatred, violence, and inequality we suffer from everyday. By creating this film we have not only better educated ourselves but have become educators to others and will continue to provide others with the importance of actively supporting peace education.

Student Oral Presentations IV A
HUB, UBC Room
1:10 – 2:20 PM

Moderator: Dr. James Scifers

Title: **The Effect of the Dietary Antioxidant Seleno-L-Methionine (SeMet) on Burkholderia Thailandensis Infected Macrophages**
Students: Michelle Pomposello
Advisor: Dr. Kara Mosovsky
Location: HUB, UBC Room 1:10 PM - 1:25 PM

Intracellular bacterial infections are difficult to treat because most antibiotics are unable to penetrate into mammalian cells. Prior research on intracellular infections suggests treatment with the immune stimulant interferon gamma in combination with the antibiotic ceftazidime yields significant Burkholderia thailandensis killing in a macrophage infection model. We believe the combination treatment uses a mechanism of action to kill bacteria that relies on the production of excess reactive oxygen species (ROS), a toxic compound found in cells. In order to confirm this hypothesis, this study explored the effect that the ROS scavenging antioxidant Seleno-L-Methionine (SeMet) had on the macrophages and bacteria. Surprisingly, a high SeMet concentration resulted in a similar result as the combination therapy did. Rather than reversing the effects of the combination therapy, a high concentration of SeMet was determined to inhibit bacterial growth and improve the health of infected macrophages. Contrary to our hypothesis, these results suggested that the antioxidant is helping to control the infection, at least in part, by inhibiting bacterial growth. Further research is required to understand the method SeMet uses to inhibit growth and reduce bacterial burden.

Title: **Psychological and Sociological Effects On Concussions**
Students: Pablo Ramos
Advisor: Dr. Jennifer Ostrowski
Location: HUB, UBC Room 1:35 PM - 1:50 PM

Concussions have been a very popular topic in the media and in the health care system in recent years, especially with regarding some of the long term side effects that have been newly discovered. Concussions can affect various careers ranging from sports to the military, but they can also affect children who sometimes are unaware of the severe symptoms and or long term effects. This presentation will take on a psychological perspective with various variables that may affect a student athlete specifically in coming forward about concussion symptoms. There is also a sociological perspective that looks at how society and peers also may determine whether an athlete may come forward with symptoms of a concussion and also how they may also affect the recovery period. It was found that variables such as scholarships, pride, peers, and education all affected whether an athlete would come forward when they would experience concussion symptoms. There are also provided alternatives to reduce the concussion risk such as changing rules in games, the type of equipment being used, and exercises to be performed prior to practice and games.

Title: **The Inclusion of Kinesio Tape Into Our Society**
Students: David Rice
Advisor: Dr. Jennifer Ostrowski
Location: HUB, UBC Room 2:00 PM - 2:15 PM

Kinesio tape, (K-tape) created in 1979 is an important tool that is used to help rehabilitate individuals into performing at their personal best. One of the unique aspects of this tape is that nearly anyone can use it. This discussion will examine the sociological impact of the integration of K-tape and it's accepted mainstream use. Three major perspectives will be covered during this discussion. They include; the acceptance of eastern medicine practices, the psychological effects of a placebo related to the use of K-tape, and sociological explanations on how a society chooses information using the in-group vs out-group model as a source of information.

Student Oral Presentations IV B
HUB, Snyder Room
1:10 – 2:20 PM

Moderator: Dr. Jane Berger

Title: **Life Histories: Methodology and Tool for Moravian Biographies**
Students: Chris Brennan
Advisor: Dr. Heikki Lempa
Location: HUB, Snyder Room 1:10 PM - 1:25 PM

The project that I have been working on is entitled "Life Histories: Methodology and Tool for Moravian Biographies." This venture is part of a much larger project that Dr. Lempa is working on. I am helping to create a template for life history interviews of Moravian alumni, emeriti, current, and retired staff members. My job has been to craft the methodological foundation of life histories as a research tool and to also conduct some case studies as models for the future.

Title: **The Flaws of Error Theory**
Students: Alicia Wallace
Advisor: Dr. Bernie Cantens
Location: HUB, Snyder Room 1:35 PM - 1:50 PM

From the time one is an innocent, naive child to when one has matured into, hopefully, an enlightened adult, life is lived making a spectrum of decisions, ranging from minute to life-changing. Yet, what is the process by which each individual utilizes to arrive at these conclusions? To reach decisions, one may use logic or prior experiences. In addition, one may follow their conscience or be guided by their inhibitions in an attempt to steer one in the perceived acceptable directions. These methods of affirming the right decision which derive from what one believes to be right and wrong, good and bad, are also known as one's moral values. However, according to John Mackie's Error Theory, moral values do not exist, but rather are simply figments of one's imagination, with the purpose designed to create order in one's society. In this paper I intend to argue that Error Theory is a groundless case for moral values, by discussing the flaws in Mackie's three primary

arguments, and, consequently, by demonstrating how Moral Realism is the ideal theory when considering a purposeful dialogue regarding moral values.

Title: **Methods and Protocols in Place for Refugee Students in the Lehigh Valley**
Students: Natalie H Lukehart
Advisor: Dr. Tristan Gleason
Location: HUB, Snyder Room 2:00 PM - 2:15 PM

Through this presentation, I will compare methods and protocols in place for refugee and evacuee students in schools in the Lehigh Valley (Bethlehem) with research-based best practices for educating this vulnerable population. I will be referring to Puerto Rican "evacuees" as refugees for all intents and purposes. Common research-based themes I have found are, the use of visual aids in instruction and communication, altering from the "banking model" of teaching to "problem posing," and the use of homogenous groups to ease the transition for refugee students in their first year. The "banking model" is a term coined by Paulo Freire. This method challenges the "depositing" of information by teachers unto their students, as opposed to a running dialogue. Freire's alternate method is "problem-posing" education. Through this method, "the roles of students and teachers become less structured, and both engage in acts of dialogic enrichment to effectively ascertain knowledge from each other" (Micheletti). The Lehigh Valley school districts help provide food, clothing, basic care items and even assist families in finding housing. In the Bethlehem Area, each school has an ESOL (English for Speakers of Other Languages) teacher, and the ESOL department is able to provide a translator for students and families when necessary.

Student Oral Presentations V A
HUB, UBC Room
2:35 – 4:00 PM

Moderator: Dr. Bernie Cantens

Title: **Evolution of Syntax in English: From Free to Rigid Word Order**
Students: Alona Struk
Advisor: Dr. John Black
Location: HUB, UBC Room 2:35 PM - 2:50 PM

Conventions of word order or syntax are "rules" we rarely think about in using modern English, but they are crucial for our understanding of a sentence or phrase. Moving the words around in the sentence produces a different, and often nonsensical, meaning. The words in an Old English sentence (c.1000 CE), however, could be switched around, and the meaning of the clause or sentence would stay unchanged. Word order free of all rules and patterns might once have been an advantage for OE speakers and poets, but for those trying to read and comprehend Old English texts, it is rather a complication and inconvenience. When we read the Middle English literary works of Chaucer (c.1400 CE), after a little practice, the sentences surprisingly "make sense" and the structure of a sentence is strikingly similar to that of modern English. The results of the drastic changes that happened in about 400 years are clear, but the process is less obvious. The goal of this presentation is to determine under what influences these changes occurred, and how the complicated and highly inflectional Old English language evolved into a language that relies on grammatical and syntactic patterns.

Title: **A Constructive Invasion of the English Language**
Students: Christine Wieder
Advisor: Dr. John Black
Location: HUB, UBC Room 3:00 PM - 3:15 PM

The term "invasion" typically lacks any positive definition or association. It communicates an unwelcome force, one that inevitably delivers death, destruction, and overwhelming terror. These components characterize much of history, for

foreign invasions have been commonplace, often a result of power struggles or intense greed. For England specifically, the Viking invasions and the Norman Conquest are indicative of such avarice and contention; they demolished significant buildings, destroyed texts, and incited horrendous bloodshed, all with the sole intention of accumulating wealth or winning the right to rule over the land. Yet, despite the carnage and devastation caused by both events, the English language indirectly benefited. With foreign invasion comes foreigners, and with foreigners come new languages and new knowledge. Unlike other languages that were eliminated, English refused to allow these foreigners to conquer the language as they conquered the land, instead English accepted (to some extent) the uninvited exposure while maintaining certain elements of its own. Overall, the Viking invasions and the Norman Conquest engendered unparalleled destruction; however, rather than eradicating the language, these events ultimately lead to advancements in Old and Middle English lexicon through the introduction of countless loanwords.

Title: **Writing as Activism: Reflections and Writings from a Fall 2017 Moral Life Course at Moravian College**
Students: Ellyce Nieves, Alicia Pisano
Advisor: Dr. Joyce Hinnefeld
Location: HUB, UBC Room 3:25 PM - 3:55 PM

These presenters were enrolled in Joyce Hinnefeld's Writing as Activism course in the Fall 2017 semester. This course serves as an English major course and also meets the LinC U2: Moral Life requirement. As such, it is a course that—in the words of presenter Alicia Pisano—"draws on elements of writing studies, philosophy, and social justice to create a unique hybrid that does not fall perfectly into any one discipline," providing students with "a chance to explore new or sensitive topics in a safe setting."

Students enrolled in Writing as Activism are required to read and write personal manifestoes or op/ed pieces, poems, short stories, and more. Influential course readings cited by Ellyce Nieves include Lynn Nottage's Sweat, Chimamanda Ngozi Adichie's We Should All Be Feminists, and Svetlana Alexievich's Voices from Chernobyl; important readings cited by Alicia Pisano include Mary Pipher's Writing to Change the World, Amit Majmudar's Resistance, Rebellion, Life: 50 Poems Now, and Adrienne Rich's What Is Found There: Notebooks on Poetry and Politics.

For this presentation Nieves and Pisano will provide both reflections on the course content and brief readings from original works that they produced for the course, including poetry and a short play.

Student Oral Presentations V B
HUB, Snyder Room
2:35 - 3:45 PM

Moderator: Dr. S. Dunham

Title: **The Medicinal Biochemistry of Bile and The Formation of Gallstones (InFocus Themed Research)**
Students: Monica Richardson
Advisor: Dr. Stephen Dunham
Location: HUB, Snyder Room 2:35 PM - 2:50 PM

I have been researching human biochemistry through clinical experiential learning and independent research and study. Throughout my shadowing experience I have encountered medical terminology, HIPPA code of conduct, patient interaction, and many different medical conditions. During my early clinical experiences, I observed a patient diagnosed with gallstones, which led to my interest in the biochemistry of this process. For this gallstone research, I have been using knowledge from previous biochemistry courses, finding new research material through scholarly articles, and shadowing a general surgeon/ breast cancer specialist. Throughout my research on the diagnosis of gallstones, I have discovered the importance of bile. Bile is an alkaline fluid that travels through the digestive system that aids in digestion by making cholesterol, fats, and fat-soluble vitamins easier to absorb from the intestine and eliminates waste from the body. In my presentation, I will introduce the biochemistry of bile, and how it leads to the formation of gallstones. This will include the

synthesis of bile, and the role it plays in the body. I will also present the effects on these organs when the transport of bile is interrupted, resulting in symptoms that lead to a diagnosis and treatment of clinical diseases.

Title: **Is Phosphorylation a Requirement For Src Recruitment to the Cx43 C-terminus?**
Students: Kayla Troutman
Advisor: Dr. Anastasia Thévenin
Location: HUB, Snyder Room 3:00 PM - 3:15 PM

Connexin 43 (Cx43) is a transmembrane, gap junction (GJ) protein that interacts with Src – a well-known oncogene. Since GJ channels are regulated by phosphorylations of the Cx43 C-terminus, we wanted to determine if phosphorylation plays a role in Src recruitment and inhibition. Two serine phosphorylation sites of the Cx43 C-terminus (S279 and S282) fall within the Src binding site. Through experiments both in vitro and in cells, we aim to determine if phosphorylation of S279/S282 of the Cx43 C-terminus affects its affinity for Src. Our results of in vitro binding experiments between Src and Cx43 279/282 mutants demonstrate that Src binding to Cx43 is indeed regulated through phosphorylation. Understanding molecular requirements of this interaction will allow us to design Src inhibitors using Cx43 as a recruitment scaffold.

Title: **Impact of Signage on First Year Residence Hall Recycling (InFocus Themed Research)**
Students: Katelyn Morrison
Advisor: Dr. Shari Dunham
Location: HUB, Snyder Room 3:25 PM - 3:40 PM

A two week study was carried out to gain further insight into the culture and patterns of how the freshmen students at Moravian College recycle in their residence halls. Photos were taken of the contents in recycling bins on each floor of a first year residence hall both before and after detailed recycling signage was posted near the bins. After analyzing and comparing before and after signage, an increase in amount of material in the recycling bins was observed. The data also indicate that signage may reduce the amount of waste contaminating the recycled material. This study has provided details about the culture in the freshmen dorms and given us insight into further studies that can be conducted to find out more about how to get students to recycle. Based off of the data from this study, it is apparent that there is a need for education in residence halls about what materials should be thrown in the recycling based off of the college's contracted recycling company. With the need for education, another study is being planned to identify if education and the co-location of the recycling bins in the residence halls will decrease the amount of contaminated recycling bins.

Student Poster Presentations I
HUB Gallery
11:45 - 12:45 PM

Title: **A Sociological, Psychological, and Economical Approach at Influenza Vaccinations**
Students: Paige Weiss
Advisor: Dr. Jennifer Ostrowski

My presentation explains the sociological, psychological, and economical aspects of the influenza vaccinations within our society. My paper breaks down the effect of flu shots in the body and how they effect not only the individual but also the society as a whole. It describes how our culture involves individuals who are curious on the supplements they place in their body and how these vaccinations are cost effective to those who obtain them in more ways than one.

Title: **The Effects of the Opioid Epidemic**
Students: Savannah Smith
Advisor: Dr. Jennifer Ostrowski

The opioid crisis has become more relevant throughout recent years across the nation. Opioids are a commonly prescribed pain medicine for chronic pain by physicians. People are misusing opioids, becoming addicted to them, and more frequently causing fatalities. Through research of multiple perspectives, psychological, sociological, and economical, it is apparent that healthcare needs to rethink the way to combat pain and prescribing opioids. Habitual opioid users typically have impairments such as cognitive and behavioral side effects. The opioid epidemic not only negatively affects the user, but also families and close friends, often times causing conflict within those relationships. The steep battle to fight the crisis is economically draining and has cost the United States alone in recent years, billions of dollars. Healthcare providers are altering their ways and calling on alternative therapies such as physical and occupational therapies to better manage pain and the opioid epidemic.

Title: **Depression in Impoverished Mothers and Families (InFocus Themed Research)**
Students: Rachelle Antoine
Advisor: Dr. Jennifer Ostrowski

The purpose of this research proposal is to examine the occurrence of depression in mothers and families who are impoverished. Utilizing various studies that have been conducted in low-income communities across the nation, socioeconomic status was found to be one of the main factors that lead to depression. African-American and other low-income minority women were also the basis of this research in terms of becoming new mothers, struggling with lack of resources while living in lower income households. Listening Visits and In-Home Cognitive Behavioral Therapy, were found to be the most effective and useful interventions for transitioning into a positive and resourceful lifestyle.

Title: **Ethical Dilemmas in Mentally Ill Prisoners**
Students: Kelly Burke
Advisor: Dr. Jennifer Ostrowski

Many prisoners in the United States who are currently incarcerated are diagnosed with a mental illness and do not have the proper access to care. A lot of these inmates are imprisoned for crimes committed due to their mental illness. Being locked up with a mental illness can create even more issues for the individual, which in turn can have an affect on the entire jail community. This research aims to look at the psychological, sociological, and social health standpoint. The influence of this topic on the researcher is one that hits close to home. The research also looks at how occupational therapy can be used to aid these inmates on getting back to their daily lives once released.

Title: **Mental Illness and its Impact on Recovery**
Students: Breonna Duckworth
Advisor: Dr. Jennifer Ostrowski

A look into the growing research of Mental Illness and its' potential affect on recovery from an injury. My research delves into multiple aspects and symptoms of mental illness such as low self-esteem and self efficacy, taking them and hypothesizing what their affect could be. Multiple literature pieces from different countries and backgrounds are used to synthesize three core perspectives of psychological, physiological, and ethical. The pieces also provide insight into the connection of the healthcare discipline.

Title: **Does Gender Affect the Rate of ACL Recovery?**
Students: Maggie Heft
Advisor: Dr. Jennifer Ostrowski

The purpose of this research is to determine if there is a significant difference between men and women when recovering from an injury to the Anterior Cruciate Ligament (ACL) in the knee. Delving deeper into anatomical differences between gender, as well as the emotions, moods, and cost of the surgery, this research provides information about why men might recover faster than women, and if that is the more common occurrence. Much of the research that was conducted about this topic alludes to the fact that women suffer more ACL injuries than men because of the way their bodies are anatomically structurally different. This adds to my theory that there are recovery time differences between men and women as women are already at the disadvantage of having different lower body structures that are more prone to this type of injury. Much of the research also focused on moods and emotion, and how this plays into recovery and gender, as well as the cost of this type of procedure and recovery and how this may affect each gender differently. The main results of this research showed that men do tend to recover faster than women, as well as have more negative attitudes and moods while recovering. With this, cost is also a major aspect of patients not receiving this type of procedure.

Title: **Using Stable Isotope Analysis to Study the Exchange of Nutrients between Myrmecophytes and their Mutualistic Ants in an Amazon Rain Forest**
Students: Kyle Froehlich, Dan Gerrity
Advisor: Dr. John Bevington

Mutualistic relationships between myrmecophytes and their ants involve protection of the trees by the ants attacking herbivorous insects on the leaves. In return the trees provide shelter and food for their ants. We hypothesize that in addition to bodyguard services for their trees the ants fertilize the trees by providing nitrogen from the prey they collect and also from the fecal matter they leave behind in the domatia of the trees. Thus far, we have collected 11 samples of Triplaris americana, and its mutualistic ant, Pseudomyrmex spp. Using stable isotope analysis, we should be able to determine if these ants are indeed contributing to the nitrogen budget of the tree. Our preliminary results from the Academy of Natural Sciences in Philadelphia favor our hypothesis. The evidence is based on a comparison of the 15N signature (δ) of the ants and the Triplaris leaves of the host plant; this suggests that in fact there is nitrogen exchange from the ants to the trees. Currently, we are waiting for more trials to run at the Academy of Natural Sciences to replicate our results.

Title: **Sociolegal Needs in the Lehigh Valley**
(InFocus Themed Research)
Students: Beth Davies, Aaron Hudson
Advisor: Dr. James Teufel

Criminal justice inequities in the United States have recently received significant media coverage. Lacking access to the civil justice system is health impactful. The civil justice system addresses legal cases linked to issues of income, education, employment, housing, social support, food access, public benefits, and insurance access. An emerging body of research supports that sociolegal needs are highly prevalent, especially among lower income populations, and potentially health harming. Method: Undergraduate public health and health science students co-created and implemented an evaluation of sociolegal needs among patrons of community health centers in three mid-sized cities. Approximately 300 patrons completed a sociolegal needs screening. The sociolegal needs screening extended prior

research. Results: Most screening participants reported at least one unmet sociolegal need, and it was most typical for participants to report two or more unmet sociolegal needs. Health was the most commonly reported impact of unmet sociolegal needs among health centers participants. Conclusions: Health harming sociolegal needs are highly prevalent among community health center patrons. Integrating civil legal aid or pro bono attorneys into the practice of community health centers would enable intervening in health-harming legal needs in a high prevalence setting.

Title: **Effects of Personalized Music on Cognition in Dementia Patients: The Music and Memory Pilot Study**
Students: Benjamin Seitz
Advisor: Dr. Cecilia Fox

The MUSIC and MEMORY Program is a non-profit organization that uses personalized music to improve the quality of life of the elderly who may be living with dementia or Alzheimer's disease. Family caregivers and elder care professionals are trained to introduce this personalized music via playlists on iPods and other digital audio devices to these individuals to enhance cognition. Music is known to become associated with an event from a person's life so that hearing this specific piece of music years later evokes memories of the original experience (Simmons-Stern et al, 2012). Furthermore, additional research has demonstrated that listening to personalized music is able to significantly reduce states of anxiety within the elderly living with dementia and Alzheimer's disease, thereby improving their quality of life (Irish et al, 2006, Guetin et al, 2009). The current pilot study was designed to measure changes in cognition through regulated listening sessions of personalized music for residents in the Phoebe Richland Home, Quakertown PA. Sessions were 30 minutes in duration twice a day, every other day over a 5-week period. An experimental and control group (n=20 per group) were formed by randomly assigning residents with medically documented dementia to either group. The Addenbrooke's Cognitive Examination (ACE) was determined to be an effective measure of changes in cognitive impairment in this population and became the assessment tool for gathering quantitative data for this study. Family and staff anecdotes regarding changes in cognition and social interaction were also noted.

Title: **The Effects of Multiple Amino Acid Mutations of a Key Quorum Sensing Peptide, CSP-1.**
Students: Kylie Chichura
Advisor: Dr. Michael Bertucci

The goal of this project is to synthesize a library of synthetic analogues of a quorum sensing molecule to determine key structure-activity relationships of the peptide in binding to its cognate receptor. The research relates to quorum sensing, a cell-density dependent form of bacterial communication used by S. Pneumoniae. Quorum sensing is controlled by extracellular chemical molecules synthesized by bacteria; the quorum sensing molecule in S. Pneumoniae is CSP-1. Multiple mutations of the amino acid sequence of CSP-1 were made to modify the peptide and allow for the design of a competitive inhibitor of the specific quorum sensing pathway.

Title: **Synthesis of Lactam Derivatives of LamD, a Cyclic Signaling Peptide of Lactobacillus Plantarum**
Students: Ashlyn Cantrel
Advisor: Dr. Michael Bertucci

Quorum sensing is the primary form of chemical communication in bacteria and is dependent upon the population density of the bacteria. The bacterium of interest is Lactobacillus plantarum, a commensal gram-positive bacterium. The quorum sensing circuit of this bacterium is regulated by the five amino acid peptide LamD. The native chemical structure of LamD is cyclic in the form of a thiolactone. Literature currently recognizes LamD as a thioester and we hypothesized there would be potential for the cyclization to proceed through an S to N acyl shift to a lactam. To test this hypothesis, two different methods utilizing solid phase peptide synthesis were used to synthesize linear LamD. The two linear LamD peptides were cyclized and analyzed for the lactam linkage. In the future, biological assays will be used to test the structure activity relationship between lactam derivatives of LamD and Lactobacillus plantarum.

Title: **CRISPR Mediated Mutation in Drosophila Melanogaster Embryos Using Electroporation**
Students: Leanna Talotta-Altenburg
Advisor: Dr. Christopher Jones

The CRISPR/Cas 9 system has revolutionized genomic engineering, and Drosophila melanogaster is widely used for molecular genetic investigations, specifically in the characterization of newly discovered mutations. Research has shown that foreign DNA can be transported across the membrane of Drosophila embryos through electroporation, and this DNA can be transiently expressed. Here, we confirm transformation via electroporation in Drosophila embryos using EGFP expression from plasmid and discuss the results and proposed optimization for a stable transformation using CRISPR/Cas9. We determined that more trials are required to assess the efficiency and practicality of this genomic engineering system.

Title: **Synthesis of a Bimetallic Compound for DNA Binding Studies**
Students: Morgan Hresko
Advisor: Dr. Stephen Dunham

Dirhodium compounds have been shown to demonstrate anti-tumorigenic properties, which may be useful for the development of chemotherapy drugs. This experiment investigated the synthesis of an inorganic bimetallic compound in order to study its binding to DNA. Even though this compound has had several papers published on its catalytic properties, it has not been made commercially available. Two different methods of synthesis were utilized throughout this research project in hopes of making enough of the bimetallic compound to test DNA binding kinetics. The challenges of overcoming air sensitive properties associated with the intermediate required for synthesis proved difficult in obtaining a yield high enough for testing DNA binding. Attempts to optimize the synthetic methods were monitored by 19Fluorine NMR spectroscopy, and the development of methods to overcome the air sensitive properties could be vital for obtaining a higher yield of the product in order to test its interaction with DNA.

Title: **The Effect of Interior Packaging Color on the Perceived Taste and Healthiness of Food**
Students: Lauren Bertucci
Advisor: Dr. Gary Kaskowitz

The purpose of this study was to conclude whether or not the interior color of packaging (red or blue) affected consumers' perceptions of sweetness and healthiness of food products (chocolate and yogurt). The research was quantitative, and data was gathered using four surveys. Based on the analysis, it was concluded that interior packaging color affects people's perceptions of food. However, the colors had different effects on the perceptions of products. Significant relationships were also seen between perceptions of sweetness and healthiness and demographics such as: gender, ethnicity, and continent of residence. With further research, these findings could have valuable marketing implications.

Title: **DNA Binding Rates of Novel Rhodium Compounds**
Students: Ana Bustamante, Miles Lizak
Advisor: Dr. Shari Dunham

Following the success of heavy-metal cancer treatments such as cisplatin, rhodium compounds have been explored as potential antitumor drugs due to their ability to bind to double stranded DNA (ds-DNA). This research will measure the binding rates of various dirhodium compounds to ds-DNA. Three dirhodium compounds that have not been previously studied were each reacted with salmon testes DNA and analyzed for DNA-binding over the course of a week. Throughout that week, time points were taken and processed to remove unbound rhodium. After heating, diluting, and filtering the timepoints, the concentration of isolated DNA was measured by molecular absorption spectroscopy and the amount of bound rhodium by atomic absorption spectroscopy. Plots of DNA-bound rhodium vs. time will be presented and the DNA binding rates of these compounds will be compared.

Title: **Interstrand Cross-Linking of a DNA Duplex by Rhodium Complexes**
Students: Ariana Caiati
Advisor: Dr. Shari Dunham

The purpose of this study is to investigate a new rhodium compound with potential antitumor properties and evaluate how this transition metal compound interacts with a DNA duplex. It is hypothesized that the rhodium compound will

form interstrand cross links with the duplex of DNA and prevent it from denaturing into single strands. So far in this study, cisplatin, a platinum metal compound known to form a percentage of intrastrand crosslinks on duplex DNA, has been used as a positive control. Denaturing polyacrylamide gel electrophoresis (dPAGE) has been used to analyze a duplex sample that is 39-base pairs in length which has been reacted with various transition metal compounds. Results of these gel electrophoresis studies will be presented and quantitation of the interstrand cross-linking of DNA by various metal compounds will be discussed in terms of potential antitumor activity.

Title: **Synthesis, Characterization, and DNA-Binding of a Novel Rhodium Complex**
Students: Lauren Caronia
Advisor: Dr. Stephen Dunham

This project synthesized and identified a novel dirhodium complex, and determined how this compound reacted with deoxyribonucleic acid (DNA). The goals of this project were to determine the rate at which the rhodium compound binds to genomic DNA, and the types of complexes it forms with nucleotides in DNA. The compound synthesized has only one site where it is likely to bind to DNA rather than two or more sites as in other dirhodium compounds. This research may be used to develop new antitumor drugs, possibly more effective and less toxic than the clinically approved metal compound cisplatin. The rhodium complex was purified from a reaction mixture by use of a silica gel column, then characterized to be a single compound by high performance liquid chromatography (HPLC) and nuclear magnetic resonance (NMR) spectroscopy. A DNA binding curve was collected to compare the DNA binding rates of control dirhodium compounds with the newly synthesized dirhodium complex. It showed the predicted results which were that the novel complex had a DNA binding rate in between that of the control compounds (dirhodium tetraacetate, and dirhodium tetratrifluoroacetate). Binding reactions with DNA nucleotides produced new peaks that were characterized by HPLC.

Student Poster Presentations II
PPHAC ATRIUM
4:00 - 5:00 PM

Title: **Assessment of the Ecological Succession of the Lehigh Gap Nature Center**
Students: Adel Mohammad Sharif
Advisor: Dr. Daniel Proud

The Lehigh Gap Wildlife Refuge contains a Superfund site made up of 400 acres of land. After being subjected to severe pollution and disturbance in the 1900's, restoration efforts began in 2004 using multiple test plots of native grass species and other vegetation. The purpose of this project was to quantify recovery efforts of small mammal populations using mark-recapture methods and to assess species diversity of larger mammals using trail cameras. A total of 22 individuals were captured, but none were recaptured, preventing estimation of population size. Deer were the most common species observed using camera traps. This study produced fewer observations of wildlife because it was completed over a shorter time period but population and community patterns are similar to a study conducted at this site by Corbin (2011).

Title: **The Effects of Dams on Water Quality in the Lehigh River Watershed**
Students: Catalina Perez
Advisor: Dr. Joshua Lord

Dams disrupt the natural flow of water, alter habitats, and prevent fish migration. Studying benthic macroinvertebrates allows scientists to evaluate the chronic effects of pollutants in an aquatic environment. Benthic macroinvertebrates are organisms that live on, under, and around rocks and sediments on the bottom of streams. These organisms are direct indicators for environmental stressors within aquatic ecosystems and are commonly used in biological monitoring. For this project, I surveyed macroinvertebrate populations from sites located above and below three dams along streams of the Lehigh River watershed. I collected streambed samples taken 50 meters both above and below the dam to evaluate the significance this obstruction has on water quality. Benthic macroinvertebrates were identified into

family and counted; each taxon has a corresponding tolerance value which is used to calculate the habitat and water quality according to the Hilsenhoff Biotic Index. From these analyses, I have been able to document the effects that each dam has on the macroinvertebrate community. Overall, the quality of water is poorer above the dams due to the increase in sedimentation and temperature behind these barriers. With this research, dam removal was taken into consideration as an option for restoring aquatic environments in 2 of the 3 sites tested, the Millbrook Dam in the Little Lehigh Creek and the Maple Preserve Dam in the Tunkhannock Creek.

Title: **Intellectual Disability: How a Down Syndrome Child View the World Differently Than How the World Views a Down Syndrome Child**
Students: Julianne Shino
Advisor: Dr. Jennifer Ostrowski

In life we see people who look different or who act different but we do not always look past that. There could be something physically different or something under the skin that can make someone different or something internally as small as a chromosomal difference. Such as a genetic condition called Down syndrome, it is a disability that causes both physical and intellectual delays within the person's development. Babies born with Down syndrome are 1 in 792 babies born; they are born with an extra chromosome and most people have 46 chromosomes and they have 47. Down syndrome is not caused by any error due to the mother but has everything to do with a problem in the cell division known as nondisjunction.
The involvement with Occupational therapy in Down syndrome children has allowed them to become more independent in their lives and have the necessary equipment to do so. The history and lifespan of children with a disability was not always good and encouraging it was sad and death stricken but over time their life expectancy has increased and they have done remarkable things in life.

Title: **Sport-Related Concussions in Adolescent Athletes from Multiple Perspectives**
Students: Leauna Schaner
Advisor: Dr. Jennifer Ostrowski

The purpose of this research project was to look at sport-related concussions (SRC) in adolescent athletes from three different perspectives: psychological, sociological and neurological. Looking at a SRC from different perspectives allows for a better understanding of what factors influence how adolescent athletes view the injury as well as what influences their decision to report it or not. The research also looked at how both male and female adolescent athletes are affected by a SRC. With an interest in athletic training, I felt it was important to gain the athletes perspective on a SRC and to understand what internal and external factors may influence them. By obtaining this information, it can better help to educate younger athletes on the signs and symptoms that may accompany a SRC and also on the importance of reporting the injury.

Title: **Benefits of Occupational Therapy in Alzheimer's and Dementia Patients (InFocus Themed Research)**
Students: Beth Davies
Advisor: Dr. Jennifer Ostrowski

Alzheimer's Disease (AD) is a brain disease that is due to the deteriorating of brain tissues. This is often seen as on of the main causes of dementia in older adults. Often times those around the individual suffering from AD will see a decrease in motor, speech, and cognitive tasks. There are more common symptoms because this area of the brain is affected most by the deteriorating tissues. The sensory component is based off the concept of hearing and seeing things around them. In a patient that is not suffering from AD usually illicit a response right away, while those that are experiencing degeneration takes a longer time to process the information and create a response. Forgetting basic tasks being performed can impair short-term memory. Lastly, the long-term memory is when the individual that is suffering cannot recall events from their childhood or even adulthood. For example, they could forget who their siblings or even if they have any. There has been intensive research that supports the notion that Occupational Therapy services have benefited those suffer with Alzheimer's disease and dementia.

Title: **Traumatic Brain Injuries: Understanding the Mechanism of Injury, Psychological Impact and Rehabilitation/Preventative Interventions for Adult Athletes (InFocus Themed Research)**

Students: Brandon Percey

Advisor: Dr. Jennifer Ostrowski

The purpose of this research is to explore the general database, describe common understandings and explain interventions in concern to traumatic brain injuries in adult athletes. In doing so, three perspectives will be examined. First, traumatic brain injuries will be analyzed biologically. Understanding the mechanism of injury will help define what a traumatic brain injury entails for an individual. Transitioning from that perspective, traumatic brain injuries will then be viewed through a psychological scope. Post-secondary risk factors are the aim of this section. The last perspective will focus on rehabilitation and prevention. The most common and current evidence-based practices are going to be echoed to show which are the most effective. In addition to the three perspectives, self-reporting will also be emphasized as a sociological process because of how difficult these injuries are to diagnose. It's highly important in the Athletic Training field to develop a more consistent method in diagnosing these injuries because of how devastating their symptoms can be. Personal experiences will be in addition throughout the extent of the research. Overall, the best known research will be converged into one source to view the life that concussions have grown to become.

Title: **Elder Abuse in People with Dementia**

Students: Bethany Skrapits

Advisor: Dr. Jennifer Ostrowski

Elder abuse in people with dementia is very common. These people are taken advantage of due to the fact that they are very vulnerable. People with dementia can need a lot of care at times but that is no excuse to abuse them. I will look at psychological and verbal abuse, including neglect, physical abuse, including sexual, and financial abuse. Being a health sciences major, planning to continue my education in occupational therapy, I also will look at how dementia effects occupational therapy as well as how occupational therapy effects dementia. In addition to that I will look at a sociological process, accommodation, and in order to understand how occupational therapists work to accommodate those with dementia. As the population is aging, and people are living longer it is extremely important to understand the prevalence of elder abuse and what we can do to stop it.

Title: **The Effect of Racial Minority versus Racial Majority Group Divisions on Social Comfort in Intergroup Interaction**

Students: Maria Peralta, Aldana Sanchez-Arias

Advisor: Dr. Robert Brill

The present experiment tested the comfort levels of Caucasian and non-Caucasian individuals within intergroup interactions containing a minority or majority racial division. The participants (N= 31) were deceived in believing they were part of a multi-campus experiment in which they were going to reflect on a racially sensitive prompt and share their reflections via webcam with other students pertaining to an LVAIC (Lehigh Valley Association of Independent Colleges) institution. The level of comfortableness of the individuals was tested through a questionnaire at the end of the experiment. Results showed that Caucasians in a racial minority group reported higher levels of discomfort than Caucasians in a racial majority group, while non-Caucasians in a racial minority group reported lower levels discomfort than non-Caucasians in a racial majority group.

Title: **Regulation of Quorum Sensing in S. Pneumoniae By Making Iterative Substitutions to the Hydrophobic Face of the Competence-Stimulating Peptide CSP-1**

Students: Robert Hillman

Advisor: Dr. Michael Bertucci

In this project, we sought to continue to determine the function of each amino acid residue in Competence Stimulating Peptide 1 (CSP1), which is the key signal peptide in the quorum sensing (QS) circuit of Streptococcus pneumoniae. A structure-activity relationship experiment was performed on the six hydrophobic amino acid residues that make up the binding domain of CSP1. The natural amino acids in this region were mutated one at a time to unnatural amino acids

for this experiment. Several notable activators of the QS circuit were discovered, including I12NV, I12NL, L13NV, and L13NL. I12NL was the most surprising result with an EC50 value of 6.7 nM, which is 2-fold more potent as an activator than the native CSP1 peptide. These tests revealed important information about the binding region of CSP1.

Title: **Derivatization of 6-acetylmorphine and Norfentanyl for GC-MS Analysis (InFocus Themed Research)**
Students: Madison Pursell
Advisor: Dr. Alison Holliday

The Lehigh Valley is currently in the grips of an opioid epidemic. Between 2014 and 2016, hospital stays due to an opioid overdose have increased by 66%. The deaths related to opioid overdoses in 2016 were double that of both 2014 and 2015. Since these drugs are highly prevalent in the Lehigh Valley and they - or their metabolites - will eventually reach wastewater, testing of wastewater can be used to determine the amount of these drugs present. Heroin and fentanyl, specifically, have been big players in the opioid crisis, so their metabolites are important to test in wastewater. Prior to these metabolites being detected by gas chromatography-mass spectrometry (GC-MS), they must be derivatized to become nonpolar. 6-acetylmoprhine (6-AM), the major metabolite of heroin, can successfully be derivatized using N,O-Bistrifluoroacetamide (BSTFA) and pentafluoropropionic anhydride (PFPA). Norfentanyl, the major metabolite of fentanyl, can be successfully derivatized using PFPA. The derivatizations of both metabolites allow for successful GC-MS analysis.

Title: **Determining Differences in Antibiotic Resistant Escherichia coli between Conventional and Kosher Chicken Breast**
Students: Melissa Cheong
Advisor: Dr. Kara Mosovsky

Throughout the years antibiotic usage in farm animals has increased, not only to prevent bacterial infections, but also for growth promotion. Thus, the occurrence of antibiotic resistant bacteria in these animals has increased. Escherichia coli (E. coli) are commonly found in the digestive tract of mammals and are exposed to the antibiotics consumed by the animal. It is common for raw meat to be contaminated with E.coli, a pathogen that can then cause disease in humans who do not handle or cook the meat properly. In this experiment, raw kosher and conventional chicken breasts were examined to look at the occurrence of antibiotic-resistant E. coli. We enriched for E. coli from the chicken using a combination of different selective broths. Selective and differential agars were used to isolate colonies and help to confirm presumptive E.coli that was isolated. Antibiotic susceptibility testing was completed using Kirby-Bauer disks to determine if E.coli was sensitive, intermediate, or resistant to eight different antibiotics. We found differences in the antibiotic susceptibility profiles of E. coli between the kosher and conventional meats. Further research can help identify important differences about antibiotic-resistant bacteria on conventional or kosher chicken.

Title: **Synthesis of Novel Dirhodium Compounds**
Students: Inderjit Sandhu
Advisor: Dr. Stephen Dunham

The discovery of cis-diammine-dichloroplatinum (II), also known as cisplatin, in 1960s led to the understanding that simple coordination compounds can be effective antitumor agents. Since the discovery of cisplatin, numerous other transition metal compounds with antitumor properties have been studied. Dirhodium tetraacetato complexes (Rh2(OAc)4) have been shown to be active in treatment of tumors in mice. In this project, we synthesize a more hydrophobic dirhodium complex, Rh2(OAc)3OA, with the potential for enhanced cellular membrane permeability, and therefore higher concentrations in tumor cells. We obtained 78 mg of product, Rh2(OAc)3OA, and characterized the complex by high performance/pressure liquid chromatography (HPLC) and 1H nuclear magnetic resonance (NMR) spectroscopy.

Title: **Does the Minimum Wage Affect the High School Graduation Rate?: An Examination of Western Pennsylvania and Eastern New Jersey**
Students: Nathan Arnold
Advisor: Dr. Sabrina Terrizzi, Dr. Eva Marikova Leeds

Graduating high school is a common aspiration for many individuals and a prerequisite to obtaining most jobs in the modern era. Because of this, it is the goal of many policymakers to increase the graduation rate. However, the opportunity to earn a paycheck creates an incentive for students to leave school before graduating. Using data from the U.S. Census Bureau, the Department of Education of New Jersey, and the Department of Education of Pennsylvania, I use multivariate regression methods to investigate if a relationship exists between the high school graduation rate and an increase in the minimum wage rate. I will specifically be looking at school districts in eight counties in Eastern Pennsylvania and Western New Jersey from 2010 to 2015. A large portion of individuals earning the minimum wage are under 25 years old. My analysis is based loosely on a study done by Crofton et al. (2009) using county level data in Maryland. In addition to school enrollment and graduation rates, I consider other variables which have been cited as having a significant effect on the ability of a student to graduate. I found a positive relationship between the minimum wage and the graduation rate.

Title: **Imagination and Dreams: Overcoming Hardship in Gisèle Pineau's Novels for Young Adults**
Students: Carol Hanna
Advisor: Dr. Joanne McKeown

All Gisèle Pineau's books for young adults, her livres de jeunesse, share a common theme: hardships. In an attempt to overcome and to cope with them, the characters resort to the unseen world of the mind. In this study, I analyze how Pineau's characters use their dreams and imagination to express and manage their troubles in her seven books for young adults: Un papillon dans la cité (1992), Le cyclone Marilyn (1998), Caraïbes sur Seine (1999), Case mensonge (2001), C'est la règle (2007), Les Colères du volcan (2008) and L'Odyssée d'Alizée (2010). Through imagination, the characters construct a reality where they can be themselves and where they feel safe. Also, their dreams are an integral mind activity in their lives that reflects their innermost feelings of fear, insecurity, solitude and disorientation in a harsh world characterized by poverty, racism, relationship dissolution, immigration difficulties and a lack of belongingness. An insight into and a connection to Pineau's own life, especially her childhood, allows me to offer a rich and meaningful foundation to her fictional topics and to trace her underlying messages, infused with hope, to the struggles she has had in her own life.

Title: **Snout Elevation During Predatory Strikes in Pythons**
Students: Nathan Jordan
Advisor: Dr. Frances Irish

Snakes have kinetic skulls with many moving parts. During predatory strikes, the upper jaws are protracted, elevated, and rotated outward to expose the teeth, increasing the chances of successful prey capture. The snout passively tracks the upper jaws, but while jaw movements have often been described, snout rotation has rarely been measured. What factors affect snout mobility? If exposing the teeth is the goal of snout elevation, snakes with longer teeth should raise the snout higher. We tested this hypothesis by recording predatory strikes in Morelia viridis (with long teeth), and Python brongersmai (with shorter teeth) using high speed video. As expected, a t-test indicated that mean snout elevation in M. viridis was significantly greater than in P. brongersmai. While filming these snakes, we noted that sometimes strikes go awry ¬- prey may be snagged by very few teeth, or missed completely, often resulting in collision with an object. In these cases, the snout is forced upward by contact with the prey or an external barrier. Are the limits of snout mobility determined by unobstructed strikes, or less predictable events? Although our data are limited, a t-test revealed a significant difference in mean snout elevation between unobstructed and obstructed strikes in P. brongersmai (M. viridis was not included because only one obstructed strike was analyzable). Further, snout elevation was greater in all obstructed strikes in both snake species. Our results suggest that snout mobility is driven by multiple factors, including tooth length, unobstructed strikes, near misses, and high velocity impacts.

Title: **Effects of Ocean Acidification on Predator Prey Relationships**
Students: Maria Manz
Advisor: Dr. Joshua Lord

This study examines the effect that ocean acidification has on marine organisms' ability to detect both predators and prey within their environment. As a consequence of ocean acidification, a marine organism's awareness of an oncoming predator may be reduced, as may a predator's ability to sense nearby prey, causing a change in marine

predator-prey interactions. This study observes the predator-prey relationship between crabs and snails under present (control) and future seawater conditions.

The study used a range of different experiments designed to observe predator-prey interactions. The first test has a path that breaks into two at the top forming a Y shape, filled with seawater. At the end of one branch a crushed mussel is placed, while the other is empty. The snail is then placed at the base of the Y, with the choice of which path to follow. In order to observe the sensory ability of both predators and prey the next experiment is done using an Asian shore crab and mussel as well as an oyster drill. While all three species chose to go to the branch with the food in it more often in the control trials than in the acidified trials, this difference was not statistically significant. However, the difference in time it took for T. obsoleta and U. cinerea to make a decision was statistically significant. This experiment allows Dr. Lord and me to determine whether or not anthropogenic climate change will change predator-prey relationships, which have significant impacts on the environment we reside in and depend on.

Title: **Choral Village**
Students: Joseph Hall
Advisor: Dr. Joy Hirokawa

Choral Village summer research project focused on culturally responsive teaching and inclusive practices from a music education framework. Adolescent participants from different nationalities, socio-economic backgrounds, and faiths from the Lehigh Valley participated in a one-week vocal music program. The researchers observed the development of the participant's attitudes towards each other over the course of the week as a result of the program.

Moravian College Honors Students
Fall 2017-Spring 2018

Arianne Aguirre, Nursing, *Enhancing Knowledge, Co-responsibility, and Family Planning Competencies in a Population of First-year College Students.* Advisor: Dr. Beth Gotwals

Nathan Arnold, Economics, *Examining the Casual Relationship Between Household Income and Dropout Rates in the Lehigh Valley Area*. Advisors: Drs. Sabrina Terrizzi and Eva Marikova Leeds

Lauren Bertucci, Management, *The Effect of Packaging Color on Perceived Taste of Food*. Advisor: Dr. Gary Kaskowitz

Abigail Conage, Sociology, *Reverse Discrimination in Nursing*. Advisors: Drs. Daniel Jasper and Debra Wetcher-Hendricks

Jacqulyn Cook, Environmental Policy and Economics, *Analyzing City Climate Change Response Methods to Determine Factors that Lead to Successful Implementation.* Advisor: Dr. Diane Husic

Kaitlin Habermehl, Nursing, *Ethical Dilemmas in Pediatric End of Life*. Advisor: Dr. Joyce Brill

Carol Hanna, French, *The Imagery of the Sea in the Eyes of Children in Five Novels by Gisele Pineau*. Advisor: Dr. Joanne McKeown

Robert Hillman, Chemistry, *Regulation of Quorum Sensing in S. pneumoniae by Making Iterative Substitutions to the Hydrophobic Face of the Competence-stimulating Peptide CSP-1*. Advisor: Dr. Michael Bertucci

Katie Lynskey, Graphic and Interactive Design, *Exploring the Design Aspects of Video Game and Cartoon Marketing and How They Compare Across Genres*. Advisor: Camille Murphy

Maria Manz, Environmental Science, *Effects of Ocean Acidification on Marine Animal Behavior*. Advisor: Dr. Joshua Lord

Rachel Myers, Physics/Mathematics, *Comparison of Wave Solutions to Potential Maps.* Advisors: Drs. Ruth Malenda and Shannon Talbott

Catalina Perez, Biology, *The Effect of Dams on Water Quality*. Advisor: Dr. Joshua Lord

Alicia Pisano, English, *Understanding and Writing in an Emerging Literary Genre: The Short Story Cycle*. Advisor: Dr. Joyce Hinnefeld

Rosemary Roberts, Political Science, *The Politics of Rhetoric: Analyzing the Words and Speeches of Barack Obama and Donald Trump to Understand their Political Success*. Advisor: Dr. John Reynolds

Adel Sharif, Environmental Science, *Changes in the Mammal Community during Ecological Succession at the Lehigh Gap Nature Center*. Advisor: Dr. Daniel Proud

Brittany Strausser, Mathematics, *Analyzing Moravian College Student Data to Understand What Influences Success*. Advisor: Dr. Brenna Curley

Leanna Talotta-Altenburg, Biology, *Genome Engineering in Drosophila Using Transient Transformation*. Advisor: Dr. Christopher Jones

Kayla Troutman, Biochemistry, *Real or Fake: Comparative Studies Between Phosphorylated Gap Junctions and their Phosphomimetics*. Advisor: Dr. Anastasia Thévenin

Kristen Weaver, Music, *Orchestration of Fanny Mendelssohn Hensel's Das Jahr*. Advisor: Dr. Larry Lipkis

Moravian College Honors Students
Spring 2018-Fall 2018

Kayleigh Bennett, Music, *The Interrelationship of Text and Music in Selected Operas of Giacomo Puccini*. Advisor: Dr. Larry Lipkis

Jaime Ernst, English/Education*, Supporting Literacy Development through Multimodality in Secondary Education*. Advisors: Drs. Joe Shosh and Crystal Fodrey

Kyle Froehlich, Biology, *An Analysis of Anti-herbivore Defenses in Triplaris Americana*. Advisor: Dr. John Bevington

Brielle Popolla, History, *A Social History from the Carter Papers*. Advisor: Sharon Muhlfeld

The Art Department

Exhibition Opening Reception: Thursday, April 19, 6:30-8:00 pm
Exhibition runs through graduation
Exhibition Closing Reception: May 12, 2:00-4:00 pm

The Senior Thesis Show represents the thesis work of graduating seniors done in their capstone courses in studio art, graphic design, art education, art history, and photography/media.

Students represented in the Senior Show:

James Gallagher

Briana Haring-Fink

Brandon Harkins

Jamie Hartmann

Emese Jordan

Angela Kilburg

Katie Lynskey

Jonathan Roth

SOAR Grant Recipients 2017-2018

2017 SOAR Summer grant recipients

Realism, Anti-realism, and the Representation Problem
Student: Michael Bassil
Mentor: Dr. Arash Naraghi

Invisible Histories
Student: Alicia Behrle & Karina Cantens
Mentor: Ms. Angela Fraleigh

Oral History: Methodology and Tool for Moravian Biographies
Student: Christopher Brennan
Mentor: Dr. Heikki Lempa

Synthesis, Characterization, and DNA Binding of a Novel Rhodium Complex
Student: Lauren Caronia
Mentor: Dr. Stephen Dunham

Assessing and Intervening in Health Harming Legal Needs in the Lehigh Valley
Co-sponsored by the Center for Intercultural Advancement and Global Inclusion
Student: Beth Davies & Aaron Hudson
Mentor: Dr. James Teufel

Parameter Dependent Network Reliability Measures
Student: Makkah Davis
Mentor: Dr. Nathan Shank

Using Stable Isotope Analysis to Study the Exchange of Nutrients between Myrmecophytes and their Mutualistic Ants in an Amazon Rain Forest
Student: Kyle Froehlich & Daniel Gerrity
Mentor: Dr. John Bevington

Crackdown on Minor Crimes as a Means of Controlling Major Crime
Student: Melanie Gutierrez
Mentor: Dr. Debra Wetcher-Hendricks

The Choral Village
Co-sponsored by the Center for Intercultural Advancement and Global Inclusion
Student: Joseph Hall
Mentor: Dr. Joy Hirokawa

MIDI Input into LilyPond
Student: Edward Harbison
Mentor: Dr. Gregory Schaper

Multisensory Phonics Intervention on Literacy Skills for At-Risk Children
Student: Jessica Hergenrother
Mentor: Dr. Jean DesJardin

Effects of Modifying of Carbon Number and Structure of Hydrophobic Amino Acids in CSP-1, a Key Quorum Sensing Peptide in *S. pneumoniae*
Student: Robert Hillman
Mentor: Dr. Michael Bertucci

Contextual Study, Translation, and Pedagogical Application of Selected Works by Aelfric of Eynsham (c. 1000 CE)
Student: Max Kraft
Mentor: Dr. John Black

Tourism and Poverty: The Effects of Rural Tourism on Homeless and Impoverished Communities on the Oregon Coast
Student: Bettyjo LaBare
Mentor: Dr. Akbar Keshodkar

Painted Turtle Nest Predation in Ponds at the Lehigh Gap Nature Center
Student: Maria Manz
Mentor: Dr. Frank Kuserk

Optimizing Cyclization of LamD Derivatives in Preparation for Bioassays of *Lactobacillus plantarum*
Student: Jonathan Nadraws
Mentor: Dr. Michael Bertucci

How Does Land Protection Preserve Good Water Quality?
Student: Catalina Perez
Mentor: Dr. Frank Kuserk

Do Leaf-Cutter Ants Attack Myrmecophytes That Support Colonies of Mutualistic Ants?
Student: Luke Peterson
Mentor: Dr. John Bevington

Do Antioxidants Interfere with Bacterial Killing in a Macrophage Infection Model?
Student: Michelle Pomposello
Mentor: Dr. Kara Mosovsky

A History of the Deputy Center
Student: Brielle Popolla
Mentor: Dr. Sandy Bardsley & Dr. Jamie Paxton

Peace Education in PA Liberal Arts, and Moravian College Student Visions for Peace
Student: Erika Salus & Molly Lokitis
Mentor: Dr. Kelly Denton-Borhaug

Electroporation of DNA into *Drosophila melanogaster* Embryos
Student: Leanna Talotta-Altenburg
Mentor: Dr. Christopher Jones

Student Conference Presentations 2017-2018

National Conference on Undergraduate Research, April 2018:

EXAMINING THE RELATIONSHIP BETWEEN AN INCREASE IN THE MINIMUM WAGE RATE AND THE HIGH SCHOOL DROPOUT RATE IN EASTERN PENNSYLVANIA AND WESTERN NEW JERSEY
Student: Nathan Arnold
Faculty advisor: Dr. Sabrina Terrizzi, Dr. Eva Leeds
Type: Poster

SYNTHESIS, CHARACTERIZATION, AND DNA BINDING OF A NOVEL RHODIUM COMPLEX
Student: Lauren Caronia
Faculty advisor: Dr. Stephen Dunham
Type: Poster

ASSESSING HEALTH HARMING LEGAL NEEDS IN COMMUNITY HEALTH CENTERS: ARE LEGAL AID ATTORNEYS HEALTH PROVIDERS?
Students: Beth Davies
Faculty advisor: Dr. James Teufel
Type: Oral

COLLEGE STUDENT FUTURE WORK STRESS EXPECTATIONS: DOES MASLOW'S HIERARCHY HOLD UP?
Student: Breanna Deemer
Faculty advisor: Dr. Robert Brill
Type: Poster

TOURISM AND POVERTY: THE EFFECTS OF RURAL TOURISM ON HOMELESS AND IMPOVERISHED COMMUNITIES ON THE OREGON COAST
Student: Bettyjo LaBare
Faculty advisor: Dr. Akbar Keshodkar
Type: Oral

IMPACTS OF OCEAN ACIDIFICATION ON PREDATOR-PREY RELATIONSHIPS
Student: Maria Manz
Faculty advisor: Dr. Joshua Lord
Type: Oral

HEALING AND THE ROLE OF IDENTITY: A STUDY OF SILKO'S CEREMONY AND ERDRICH'S THE RED CONVERTIBLE
Student: Katelyn Snyder
Faculty advisor: Dr. Nicole Tabor
Type: Oral

DATA AND SOUL: EXPLORATORY DATA MINING AND ANALYSIS IN MUSIC
Student: John Vonelli
Faculty advisor: Dr. Thyago Mota
Type: Poster

"IS MATH REAL?" A CRITICAL EXAMINATION OF MATHEMATICAL REALISM AND NOMINALISM
Student: Zeng Zeng Yang (Unable to attend but was accepted and did the research)
Faculty advisor: Dr. Leon Niemoczynski
Type: Oral

12th Moravian College Undergraduate Conference in Medieval and Early Modern Studies, Dec. 2, 2017:

Velvet Alvarez "The Voice of Discontent in Cervantes' *La fuerza de la sangre* [The Power of Blood] (1613)"

Anastasia Anastasopoulos "The Conflict between the Church and the Crown in *Yo, la peor de todas* (1990)"

Tyler Bergsma "O, Wonder! I AM in the Play! Analyzing Miranda's Role in *The Tempest*"

Kayleigh Ficarra "Behind Every Man is a Powerful Woman? The Relationship Between Motherhood and Power"

Charlotte Finnerty "Music and Shakespeare"Andres Melgar "Sor Juana's Legacy on Mexican and Latina Writers"

Kelsie Lynn "Cross-Dressing in Shakespeare"

Members of Jan Ciganick's Art 113 course; poster display on medieval art and architecture in Eiffe Gallery

9th Annual Moravian Philosophy Undergraduate Conference:

"*Fact-Constructivism from a Realist/Anti-Realist Backdrop."* Michael Bassil
"Kierkegaard's False Asceticism." Cody Yarnall
"The Morality of Animal Testing in the Medical Field." Alicia Wallace
"Aristotle's View on Beauty Within Art: Romantic Flower Chair." Sarah De Franco

National Student Nurse Association Conference:

Katie Habermehl- Pediatric Palliative Care: The Impact Nursing Education has on the Delivery of Care
Advisor: Dr. Joyce Brill

Arianne Aguirre- Enhancing Contraceptive Knowledge, Co-responsibility, and Family Planning Competencies in a Population of First-year College Students
Advisor: Dr. Beth Gotwals

"URC-PA" Undergraduate Research at the Capitol -- Pennsylvania, April 17, 2018:

Jacqulyn Cook, Analyzing Municipal Climate Change Response Methods to Determine Factors that Lead to Successful Implementation
Advisor: Dr. Diane Husic

Beth Davies and Aaron Hudson, Assessing and Intervening Health Harming Legal Needs of the Lehigh Valley.
Advisor: Dr. James Teufel

Lehigh Valley Section of the American Chemical Society, Undergraduate Research Poster Session at DeSales University, April 17, 2018:

Ana Bustamante and Miles Lizak, "DNA Binding Rates of Novel Rhodium Compounds"
Advisor: Dr. Shari Dunham

Ariana Caiati, "Interstrand Cross-Linking of a DNA Duplex by Rhodium Complexes"
Advisor: Dr. Shari Dunham

The 32nd Annual Student Mathematics Conference at Moravian College:

Brittani Costa, "Filling in the Blanks: Determining Periodic Signals in Unequally Spaced Astronomical Data"

Bryan Harvey, "Collapsing Graphs"

Charles Peeke, "Animation: A Mathematical Perspective”

Rachel Myers, "Exploration of Potential Energy Functions of the 43**Π** Electronic State of NaCs”

2018 Mid-Atlantic Writing Centers Association Conference, March 24, Rowan University:

Two groups of students presented on their work related to their roles as Writing Center Tutors and Writing Fellows. Mike Guarino, Na'im Pretlow, and Vaughn Tempesta presented a talk titled, “Identity, Privilege, and Activism: Cultivating Spaces of Community for First-Year Writers.” This presentation was inspired by the students' work as Writing Fellows in Fall 2017 First-Year Writing Seminar courses taught by Khristina Haddad (Na'im and Vaughn) and Belinda Waller-Peterson (Mike).

Katelyn Snyder, Autumn Paul, and Sara Weidner presented “Connection, Cooperation, and Collaboration: Building Community in the Writing Center,” which explored ways that writing center tutors and writing fellows can instill a sense of community among student writers by emphasizing collaboration and encouraging a culture of peer support. This panel drew upon students' work as Writing Center Tutors (Katelyn and Sara) and Writing Fellows with Fall 2017 First-Year Writing Seminar courses taught by Sarah Goletz (Autumn) and Joy Hirokawa (Sara).

Other presentations:

Rachel Myers presented a poster and gave a talk at the American Association of Physics Teachers-Central Pennsylvania Section AAPT-CPS) at Penn State Schuylkill, April 7th, 2018.
Advisor: Dr. Ruth Malenda

Courtney Brodeur, Goebbels, Nazi Propaganda, and the Question of Effectiveness, 1933–1945, Undergraduate Research Conference in German Studies, co-organized by Moravian and Lafayette College, April 2018
Advisor: Dr. Axel Hildebrandt

Adel Sharif, Assessment of the Ecological Succession of the Lehigh Gap Nature Center, poster presented at the Lehigh Valley Ecology & Evolution Symposium, April 7, 2018.
Advisors: Drs. Frank Kuserk and Daniel Proud

Nathan Jordan, "Snout elevation during predatory strikes in pythons,"poster presented at the Lehigh Valley Ecology & Evolution Symposium, April 7, 2018.
Advisors: Dr. Fran Irish

Michelle Pomposello, "The Effect of Dietary Antioxidant Seleno-L-Methionine (SeMet) on *Burkholderia thailandensis* infected macrophages," oral presentation (Honorable Mention) at the Pennsylvania Academy of Sciences Annual Meeting, March 2018.
Advisor: Dr. Kara Mosovsky

Kayla Troutman, “Is Phosphorylation a Requirement for Src Recruitment to the Connexin43 C-terminus?”, Pennsylvania Academy of Sciences meeting at the Indiana University of PA, March 24th, 2018.
Advisor: Anastasia Thevenin

Robert Hillman & Jonathan Nadraws, National Meeting of the American Chemical Society, Washington D.C., August 2017.

Jade Bolds, Ellyce Nieves, and Alicia Pisano, panel presentation, "Writing as Activism: Reflections and Writings from a Fall 2017 Moral Life Course at Moravian College,” 2018 Pennsylvania College English Association Conference, Hotel Bethlehem (March 22-24, 2018; theme: "Rise Up: Social Protest in Literature, Creative Writing, & Pedagogy").

Sarah DeFranco and Erin Adolt presented the following poster at the Eastern Psychological Association in March, 2018.
Title: Sex and Athleticism: Exploring Gender Stereotypes through Priming
Authors: Sarah Johnson, Erin Adolt, Sarah DeFranco, Shaun Pateman, Amy Trout