MORAVIAN
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The 19th Annual Student Scholarship and Creative Endeavors Week

April 12 - 18, 2024

This year, 67 students, representing 36 different areas of study, are giving oral and poster presentations during the 2024 Scholars Week activities. Many thanks to their 30 faculty sponsors. Since the inception of this event 18 years ago, 1278 students have shared their scholarly accomplishments with the Moravian University community.

Additionally, numerous talented student musicians and artists will participate in ensembles, recitals, and art exhibits in April.

Congratulations to these student scholars for all their accomplishments.

Acknowledgements

The 19th Annual Moravian University Undergraduate Student Scholarship and Creative Endeavors Day would not have been possible without the commitment of many people at Moravian University.

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

Moravian University Honors Program

Kim Demyan and Cory Dieterly, Reeves Library

Sarah Corroda and Kayla Holdridge, Office of the Provost

Dave Leidich, Department of Art

Bill Bauman and Neil Wetzel, Department of Music

Center for Scholarship, Research, and Creative Endeavors

Sarah Johnson, SOAR Program Director

Axel Hildebrandt, Honors Program Director

Nathan Shank and Michelle Schmidt
(for all the templates and ideas used in past years)

The original UGRACE *ad hoc* group who set the stage for this celebration way back in 2005: John Black, Dennis Glew, Carl Salter, Kay Somers, Anne Dutlinger, Joel Nathan Rosen, Jim Skalnik, Michelle Schmidt and Curt Keim

The 19th Annual Moravian University Undergraduate Student Scholarship and Creative Endeavors Week
April 12 - 18, 2024

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Schedule of Creative Events

(See also: https://www.moravian.edu/music/concert-schedule**)**

Friday, April 12, 2024 (7:30 PM): ***Student & Community Ensemble***
Moravian University Celtic Ensemble

Alison Gillespie, *director*
Peter Hall – Hurd Campus, Moravian University
General Admission: $15 / Seniors & Students: $10

Saturday, April 13, 2024 (7:30 PM): Moravian University Wind Ensemble

Dr. JoAnn Wieszczyk, *director*
Foy Concert Hall – Hurd Campus, Moravian University
General Admission: $15 / Seniors & Students: $10

Sunday, April 14, 2024 (1:00 – 5:00 PM): Moravian University Jazz Fest
Jazz Combo I, Jazz Combo II, Jazz Fusion, Jazz Vocal, & BIG Band

Tony Gairo, David Roth, Paul Rostock, Lora Sherrodd, & Dr. Neil Wetzel, *directors*
Foy Concert Hall – Hurd Campus, Moravian University
General Admission: $15 / Seniors & Students: $10

Some key events also occur after the main week of Student Scholarship:

Friday & Saturday, April 19 & 20, 2024 (7:30 PM): Moravian University Dance Concert

Lisa Busfield, *artistic director*, & Karen Riehl, *assistant director*
Foy Concert Hall – Hurd Campus, Moravian University
General admission & ticketing information – TBA

Sunday, April 21, 2024 (7:00 PM): Moravian University Composers' Concert

Dr. Larry Lipkis, *director*
Foy Concert Hall – Hurd Campus, Moravian University
No admission charge

Saturday, April 27, 2024 (7:30 PM): Moravian University Choral Ensembles and Festival Orchestra – featuring *Requiem in D minor* by Wolfgang Amadeus Mozart

Dr. Paula Zerkle, *director*
Foy Concert Hall – Hurd Campus, Moravian University
General Admission: $15 / Seniors & Students: $10

The 19th Annual Moravian University Undergraduate Student Scholarship and Creative Endeavors Week
April 12 - 18, 2024

MORAVIAN UNIVERSITY

Schedule of Oral and Poster Presentations

Tuesday, April 16, 2024

9:15 a.m.	**Welcome and Opening Remarks** 212 Reeves Library
9:30 – 10:40 a.m.	**Session I: Oral Presentations** 212 Reeves Library
10:50 – Noon	**Session II: Oral Presentations** 212 Reeves Library
Noon – 1:00 p.m.	**Poster Session I** Reeves Library – Main Level
4:00 – 5:00 p.m.	**Poster Session II** Reeves Library – Main Level
5:30 p.m.	**Honors Banquet (by invitation)** Saal – Bahnson Center (Seminary)

Schedule of Oral and Poster Presentations

Wednesday, April 17, 2024

Noon – 1:00 p.m. **Poster Session III**
Reeves Library – Main Level

4:00 – 5:00 p.m. **Poster Session IV**
Reeves Library – Main Level

Schedule of Events on April 18th

The Celebration Continues!

4:45 p.m. **Faculty/Scholarship Celebration**
Faculty & Trustee Reception
Afterwards Café, Lower-level Reeves Library

6:00 p.m. **Joint Reception for Scholarship Week and opening of the Kappa Pi, Thesis Show**
(Senior Art Show)
Payne Gallery (Hurd campus)

The 19th Annual Moravian University
Undergraduate Student Scholarship and Creative Endeavors Week

Program Overview

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

Tuesday, April 16, 2024

9:15 AM: Welcome and Opening Remarks - 212 Reeves Library

ORAL SESSION I

Oral Presentations Session I: Moderator – Dr. Diane Husic 212 Reeves Library			
9:30 AM	Gianna Tully	Humanities – Writing Studies	Dr. Crystal Fodrey
	Outlining Habits and their Effects on the Writing Process in Different Disciplines		
9:55 AM	Rosie Symia	Early Childhood Special Education	Dr. Jean DesJardin
	Parents' Perceptions of Early Intervention for Young Children with Hearing Loss		
10:20 AM	Nathan Pynchon	Humanities – History (Historical Studies)	Dr. Heikki Lempa
	In the Name of the Republic: Léger-Félicité Sonthonax, Race, and Slavery in 18th Century Haiti		

ORAL SESSION II

Oral Presentations Session II: Moderator – Dr. Diane Husic 212 Reeves Library			
10:50 AM	Gianna Tully	Poetry/Art History/Rhetoric/Women's Studies	Dr. Liz Gray
	Unveiling the Masks of the Women Artists of Second Wave Feminism		
11:15 AM	Cielo Disla	Biology – Ecology and Evolution	Dr. Daniel N. Proud
	Systematic Revisions of Cosmetid Harvesters (Opiliones: Laniatores: Cosmetidae) in the Caribbean Islands		
11:40 AM	Owen Nahf	Health Sciences – Pre-Physical Therapy	Dr. Michael Steimling
	Differences in Running Kinematics between Running on a Treadmill vs. Overground in Recreational Runners		

POSTER SESSION I

12:00 - 1:00 PM
Poster Presentations I
Reeves Library

Student(s)	Project Discipline	Advisor(s)
Gwen Kester	Biochemistry	Dr. Shari Dunham Dr. Anastasia Thévenin
Poster #1: Biomolecule-Binding, Cytotoxicity, and Cellular Targets of Novel Dirhodium Complexes		
Ebony Saccento	Marine Biology/Animal Behavior	Dr. Joshua Lord
Poster #3: Pagurus longicarpus Foraging Under Different Conditions		
Madelyn Ott	Biology – Genetics	Dr. Christopher Jones
Poster #5: Drosophila melanogaster Rop Seizure Gene		
Julia Lapinska	Biology	Dr. Natasha Woods
Poster #7: Into the Storm: Investigating the Effects of Salinity and Burial on Morella Growth		
Geoffrey Kleinberg Mariam Abdalla Alexis Jordan	Mathematics and Computer Science	Dr. Trisha Moller Dr. Michael Fraboni
Poster #9: Tilt-the-Die: A Mathematical Game		
Gianna Tully	Poetry/Art History/Rhetoric/Women's Studies	Dr. Liz Gray Dr. Angela Fraleigh
Poster #11: Women in their World: A Detailed Analysis of Creative Genres Produced During Second Wave Feminism		
Gabriel (Brie) Jacobs	Environmental Science	Dr. Alison Holliday
Poster #13: Quantification of Bioavailable Heavy Metals in Soil Layers		
Jean-Pierre Appel	Graph Theory	Dr. Nathan Shank
Poster #15: k-Total Bondage in Graphs		
Pia Mazzella DiBosco	Nursing	Dr. Karen Groller Dr. Colleen Payton
Poster #17: Exploring Ethnic Influences on Pediatric Obesity		
Jean-Pierre Appel Victoria Harper Jonathan Walsh Elina Georges	Mathematics	Dr. Trisha Moller Dr. Michael Fraboni
Poster #19: Tetrominos		
Dwight Holloway	Animal Behavior	Dr. Sara McClelland
Poster #21: Food Fights: Feeding Competition in male Mantled Howler Monkeys (Alouatta palliata)		
Jefferson Cano Menses	Organic Chemistry	Dr. Godfred Fianu
Poster #23: The synthesis of 1-(diphenylamino)-2-propanone for Radical Arylation studies		
Seth Coleman Zach Bingaman	Computer Science – Application Development	Dr. Jeffery Bush
Poster #25: Automatic Customization of Parameterized 3D Models		
Melody Fermin	Biology	Dr. Daniel Proud
Poster #26: Phylogenetic Analysis of the Cosmetidae from the Dominican Republic		

POSTER SESSION II

4:00 - 5:00 PM
Poster Presentations II
Reeves Library

Student(s)	Project Discipline	Advisor(s)
Victoria Donovan	Biochemistry	Dr. Anastasia Thévenin
Poster #2: Does PTEN, a Dual Specificity Phosphatase, Dephosphorylate Connexin 43?		
Sophia Shienvold	Biochemistry	Dr. Anastasia Thévenin
Poster #4: Connexin 43: A Molecular Scaffold for Src-Csk-PTEN Interaction		
John Riley	Magnetospheric Physics	Dr. Keith Wood
Poster #6: Plotting 3D Current Distributions in the Inner Magnetosphere		
Joel Hendricks	English/Communications	Dr. Crystal Fodrey
Poster #8: The Relationship Between Individuals' Exposure to Rhetoric in the Narratives of Interactive Media and the Surrounding Discourse		
Kristian Wolf Stefano Garofalo Jacob Hyatt Sydney Shifman	Discrete Mathematics	Dr. Trisha Moller Dr. Michael Fraboni
Poster #10: Toggle on a Cycle with 2 Cords		
Hailey Belverio	Biochemistry	Dr. Anastasia Thévenin
Poster #12: Mutually Exclusive Interaction of Connexin 43 with Src and ZO-1 in Healthy and Cancer Cells		
Giselle Ponce-Bautista Cielo Disla	Biology	Dr. Natasha Woods
Poster #14: The Role of Dune Elevations in Morella cerifera Seedling Establishment		
Avery Napolitano Bryan Krum Louis Spann Gavin Wagner Tori Santoriello	Business/Accounting Portfolio Construction and Investment Management	Dr. Daniel O'Connor
Poster #16: Amrhein Investment Club: The Growth Fund		
Devon Goerlich Elisabeth Mohney	Psychology	Dr. Sarah Johnson Dr. Stacey Zaremba
Poster #18: Using Reading Circles to Promote Science Self-Identification in Six to Ten Year-Old Girls		
Santoshi Mutyala	Biological Sciences	Dr. Sara McClelland
Poster #20: Temporal Trends in Primate Distribution: An Analysis of Line Transect Data from 2023 to 2024		
Megan O'Brien	Marine Biology	Dr. Joshua Lord
Poster #22: Analyzing Dominance In Prey Predator Relationships		

Wednesday, April 17, 2024

POSTER SESSION III

12:00 - 1:00 PM
Poster Presentations III
Reeves Library

Student(s)	Project Discipline	Advisor(s)
Rachael Goodman	Marine Biology	Dr. Joshua Lord
Poster #1: Impact of Temperature Change on the Foraging Abilities of Mud Snails		
Lauren Latchford	Biochemistry	Dr. Anastasia Thévenin
Poster #3: Regulatory Effects of MAPK Signaling Pathways on Cx43-Src Interactions		
Helaena Holjes	Environmental Science	Dr. Natasha Woods
Poster #5: Rooting for Resilience: Investigating Belowground Interactions in Shrub Encroachment		
Kassandra Alicea	Biochemistry – Cancer Research	Dr. Stephen Dunham
Poster #7: Probing DNA-Binding Sites of Novel Rhodium Complexes Through Mass Spectrometry		
Riley Masten	Biological Sciences	Dr. Daniel Proud
Poster #9: First Insights into the Diversity of the Real Cynortellana (Opiliones: Cosmetidae) from Cuba		
Alexandra McDevitt	Analytical Chemistry	Dr. Alison Holliday
Poster #11: The Detection of Docosahexaenoic and Linoleic Acid in Equine Feed Samples		
Tegan Haley	Inorganic Chemistry	Dr. Stephen Dunham
Poster #13: Optimizing Hydrophobic Properties in Cytotoxic Dirhodium Compounds		
Mary Jane Granito	Speech-Language Pathology	Dr. Monica Kaniamattam
Poster #15: Developing Cross-Cultural Competence for Family-Centered Care: A Collaborative Autoethnography		
Zachery Bingaman	Computer Science – App Development	Dr. Jeffrey Bush
Owen Halliday		Dr. Sara Benham
Poster #17: 3DADAPT: Organizing 3D Printable Assistive Tech Devices		
Jacob Freeh	Microbiology	Dr. Kara Mosovsky
Poster #19: Determining the Mechanism of Seleno-L-Methionine Protection of Burkholderia-Infected Macrophages		
Michael Irving	Public Health – Community Healthcare Interventions	Dr. Colleen Payton
Poster #21: Community Strategies for Improving Health in Allentown: The Lens of Diabetes Health Disparities		
Savannah Labukas	Biochemistry	Dr. Stephen Dunham
Poster #23: Observing Dirhodium complexes of Poly-L-Glutamic Acid by Mass Spectrometry		
Dakota Bateman	Psychology	Dr. Sarah Johnson
Poster #24: Distraction as Expressed Through Color		

POSTER SESSION IV

4:00 - 5:00 PM
Poster Presentations IV
Reeves Library

Student(s)	Project Discipline	Advisor(s)
Christina Awwad	Chemistry	Dr. Alison Holliday
Poster #2 Quantifying delta-8-tetrahydrocannabinol in commercial hemp products		
Yami Gottbrecht	Biology	Dr. Joshua Lord
Poster #4: Impact of Habitat on Mobbing Behavior in Shrimp		
Hayley Carroll	Chemistry/Genomics	Dr. Daniel Proud
Poster #6: Genomics and biochemical analyses of a cosmetid harvester (Arachnida: Opiliones)		
Nick DiVittorio	Biology	Dr. Joshua Lord
Poster #8: Effect of Predators on Grass Shrimp Dominance Hierarchies		
Emmanuel Bulted	Chemistry	Dr. Stephen Dunham
Poster #10: Synthesis and Characterization of Mixed Carboxylate Ligand Rhodium Complexes		
Caleb Gunkle	Biology – Ecology	Dr. Daniel Proud
Poster #12: Investigating the Diversity of Cosmetid Harvesters (Opiliones) in Central America		
Kaylee Yeager	Neuroscience/Biology/Chemistry	Dr. Christopher Jones Dr. William Farina
Poster #14: Exploring the Role of Zinc in a Transgenic Drosophila Model of Alzheimer's Disease		
Hailey Hoffman	Biology	Dr. Joshua Lord
Poster #16: Predator Size and Mobbing in Grass Shrimp		
Jacob Donmoyer	Environmental Science	Dr. Natasha Woods
Poster #18: Weathering the Storm: Investigating the Impact of Salinity and Burial on M. cerifera Seedling Root Growth		
Jorge Velazquez	Chemistry	Dr. Godfred Fianu
Poster #20: A Titanocene(III) Borohydride Catalyzed Reduction of Nitriles to Amines		
Abigail Angelisanti	Biochemistry	Dr. Anastasia Thévenin
Poster #22: Connexin 43: A Scaffold For Efficient Inhibition Of Src Activity By Csk		

Moravian University Music Department

Music Since 1742

7:30 PM - Friday, April 12, 2024
Peter Hall - Hurd Campus

Moravian University Celtic Ensemble

"Celtic Critters"

- How Ireland and Scotland feature their fauna in song, story and music -

Froggy Went a' Courtin' Traditional Appalachian

This is an Appalachian standard that was originally Scottish dating back to the 1500s. The words and melodic presentation vary but the literal story is about a frog proposing marriage to a mouse, and all the friends they'll invite to the wedding, including a firefly, a moth, a rat, a goose, ants, and a bumblebee. Some say the song may have been a satire for the proposed union of Mary Stuart, later Mary Queen of Scots, to the three-year-old French Prince Louis - "the frog"; this marriage never occurred. The song resurfaced a few years later when the French Duke of Anjou began to woo Queen Elizabeth I in 1579. Many famous people have covered this song, including Woody Guthrie, Kermit the Frog of Sesame Street, *Burl Ives, and Bob Dylan. Our version comes from the singing of Elizabeth Mitchell on the Smithsonian* Folkways *album.*

***Polka Set*: Salmon Tailing up the River /** Andy Irvine
Shoe the Donkey / Traditional Irish
The Jubilant Goat Ailie Robertson

Polkas, set in 2/4 time signature, are popular dance tunes in Ireland and these three feature the salmon, the donkey, and the goat in keeping with our concert theme. The first tune was composed by a founding member of the groundbreaking Irish group Planxty. The third tune was composed by a harpist, and member of the pan-Celtic group The Outside Track.

The Ballad of the Foxhunter Poem by W. B. Yeats

The words to this Yeats poem are set to the melody of a traditional slip jig called The Foxhunter. Dublin-born William Butler Yeats drew ideas for his poetry from Irish country culture at a time when foxhunting was a very popular sport. In this poem, an old hunting master, close to dying, asks to be seated one last time outdoors with his blind hound dog by his side, as he listens to the hounds and the hunting horn readying for a foxhunt. Again, our featured animal is the one being hunted—the fox. But also the hound figures prominently in the lyrics.

The Rhythm of the Goat Jim Fidler

Fidler is a St. John, Newfoundland-based folk/reggae musician and composer who wrote and performed this song for his 1995 first album Gypsy. *The rhythm of the goat refers to the Irish drum, a bodhran, made from goatskin stretched over a wooden frame. The girl in the song is offered many tunes played on different instruments, but what she insists she prefers to dance to is the rhythm of the goat—or the bodhran (pronounced "bough-ron") .*

The Orkney Walrus Thora Linklater

Back in 2013, an Artic walrus swam up on the beach of the Orkney Islands and stayed for a day or two, attracting many curious onlookers to the rare event and inspiring this delightful waltz composed by a nearby fiddle teacher.

The Blackbird Traditional Scottish

One of the best-known and frequently encountered songs in the folk repertoire, The Blackbird *has many versions, either from the man or the women's perspective. In this version, the woman longs for her sailor who is off to sea, dreaming of being able to fly to his ship. Shannon Heaton, a Boston-based Celtic musician, re-worked these lyrics, combining imagery from many older versions of the song. She also wrote the jig sandwiched in the middle.*

The Otter's Holt / Junior Crehan
The Lochaber Badger Fred Morrison

The first tune in this reel set, celebrating the otter and the badger, was composed by County Clare-born fiddler, singer and step-dancer Junior Crehan (1908-1998), with a holt being an otter's den. Morrison, composer of the second tune, is a contemporary Glasgow-born piper and composer. Widely regarded as one of the world's top pipers on both the uilleann and highland pipes (elbow and blown pipes), his music is rooted in the Hebridean Island music tradition where his father and teacher hailed from. Lochaber is an area in the Scottish Highlands featuring the country's highest peak and the famous historic site of the Battle of Glen Coe.

Now Westlin' Winds Robert Burns

One of this Scottish Bard's most evocative poems, this song is even more remarkable because the poet penned it when he was only 16 years old! The song addresses the beauty of nature in autumn as not only a nature lover's paradise but also a hunter's dream. Burns contrasts the "sportsman's joy" and "slaughtering guns" with the "charms of nature," referring to "the savage and the tender." Against this backdrop, Burns pursues his own game of courting his girlfriend, Peggy. In the song, he mentions nine species of birds, also demonstrating his impressive knowledge of the flora and fauna of his native Scotland.

The Wellerman Traditional Sea Shanty

This is one of the best-known sea shanties. The ability to keep a work crew in close coordination was critical on a ship and the singing of these work songs helped keep the rhythm. The Wellermen crewed ships for a company called The Weller Brothers who established a whaling station on New Zealand's South Island in 1831. The name of the ship in this song is the "Billy of Tea" which was an Australian term for a tin can used for boiling tea suspended over a fire. Whaling was an extremely dangerous job and in this case the waters that were being fished were actually the breeding grounds for the whales they sought----so such companies actually systematically wiped out the whale population for a while in the Southern Hemisphere. This song was written around the time that Herman Melville was working on whaling ships as a young man and the song tells of a particularly tenacious whale, who, though harpooned and wounded, would not give up and towed the ship on a merry chase. Likely, this was one of the stories that inspired Melville's novel Moby Dick. *In this case, our featured animal is the one being hunted.*

The Butterfly / Tommy Potts
Reel De Lapin / Traditional French Canadian
The Cat's Meow Joannie Madden

This mixed set of tunes featuring a slip jig, a reel, and a double jig, features a butterfly, a rabbit, and a cat. The first tune was composed by Dublinman Potts who was an influential Irish musician who brought improvisation to the tradition. The reel is a bouncy number played often in Quebec featuring pizzicato from the strings, and the last tune was written by Bronx-born Irish-American whistle and Irish flute player Joannie Madden, creator and leader of the all-female group Cherish the Ladies.

A Place in the Choir Bill Staines

This song about animals and the sounds or "music" they make was composed by New Hampshire-based folk singer/writer Bill Staines, called the "Arlo Guthrie of his time" and has been covered by many Irish bands. S taines was a regular performer at the Godfrey Daniels Folk Listening Club in Bethlehem until his death in 2021. Our version is taken from Celtic Thunder, the Irish based all-male theatrical touring stage show.

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The Moravian University Celtic Ensemble is:

Alison Gillespie, *director*, has been an artist-lecturer and Celtic Fiddle instructor in the Moravian University Music Department for 27 years. She has taught, performed, and recorded with Celtic musicians here in the States and in Ireland. Locally, Alison performs with her Lehigh Valley-based Celtic bands Blackwater, with whom she has recorded three albums, and the award-winning band Big Valley Bluegrass, with two albums recorded. Alison is a frequent workshop clinician, she runs a monthly Irish music session in Hellertown, and she is the founder and director of the long-running annual Celtic Classic Fiddle Competition. She also teaches at her home-based studio in Coopersburg.

Tom Gillespie, *guitar, piano*, is a member of the Lehigh Valley-based Celtic groups Blackwater and Big Valley Bluegrass and is also a lutenist for the Pennsylvania Shakespeare Festival.

Sean O'Boyle, *tenor & baritone ukelele*, is an Artist-in-Residence at Moravian University. He is an internationally acclaimed musician, conductor, director, and composer based in Australia where he has composed, produced, and recorded music for more than 150 albums with the Australian Broadcasting Corporation. Sean is particularly interested in the indigenous music of Australians, having composed a celebrated *Concerto for Didgeridoo and Orchestra*. He also composed the ABC's Broadcast theme for the Sydney Olympics, among many career accomplishments.

Abigail Hackett, *Irish dancer*, is a student of the O'Grady-Quinlan School of Irish Dance. She is in 8th grade and has been dancing for 10 years. She recently competed in the World Irish Dance Championships in Ireland. Abigail also studies the Irish fiddle, plays violin in her school orchestra, and runs cross country.

Cesar Corvera, *fiddle* - Andrea DeCarlo, *voice, flute*
Jennie Hoose, *fiddle* - Sam Houser, *percussion* - Gwen Kester, *flute*
Jennifer Kerchner, *fiddle* - Shannon Lawlor, *flute*, *voice*
Samuel Lingen, *voice* - Andrew Miller, *voice*, *mandolin*
Bethany Schulte, *viola* - Dave Schulte, *upright bass*

The Moravian University Celtic Ensemble comprises students, alumni, and faculty.

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Upcoming Music @ Moravian

Student Ensemble
Moravian University Wind Ensemble
Dr. JoAnn Wieszczyk, *director*
7:30 PM – Saturday, April 13, 2024
Foy Concert Hall – Hurd Campus, Moravian University
General Admission: $15 / Seniors & Students: $10

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Student Ensembles
Moravian University Jazz Fest @ Foy Concert Hall
Jazz Combo I, Jazz Combo II, Jazz Fusion, Jazz Vocal, & BIG Band
Tony Gairo, David Roth, Paul Rostock, Lora Sherrodd, & Dr. Neil Wetzel, *directors*
1:00 – 4:30 PM – Sunday, April 14, 2024
Foy Concert Hall – Hurd Campus, Moravian University
General Admission: $15 / Seniors & Students: $10

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Students in Recital
Moravian University Dance Concert
Lisa Busfield, *artistic director*, & Karen Riehl, *assistant director*
7:30 PM – Friday & Saturday, April 19 & 20, 2024
Foy Concert Hall – Hurd Campus, Moravian University
General admission & ticketing information – TBA

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Student Composers
Moravian University Composers' Concert
Dr. Larry Lipkis, *director*
7:00 PM – Sunday, April 21, 2024
Foy Concert Hall – Hurd Campus, Moravian University
No admission charge

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- For up to date information: https://www.moravian.edu/music/concert-schedule
or call the Music Department - 610-861-1650 / email: music@moravian.edu -

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Performance Hall Etiquette

Food and Drink
Food and drink (including bottled water) are not permitted in the performance halls (Foy, Peter, or Hearst). Eating and drinking are permitted only in designated areas.

Smoking
Smoking is prohibited inside any building or facility on the Moravian University Campus.

Late Seating
Every effort is made to begin events on time. Latecomers will be seated at the discretion of the management. This is for the consideration of both the artists and the audience.

Photographs/Recording
No recording devices of any kind are permitted in the performance halls without permission of the performers and the Music Department staff. These include, but are not limited to, all cameras, cell phones, and audio recorders.

Cell Phones/Electronic Devices
Please set cell phones and electronic devices to their "silent signal" before entering the theatre. Please refrain from using cell phones, ipads, and the like inside the performance halls. These devices are disturbing to performers and bothersome to other patrons.

Thank you for your cooperation !

Moravian University encourages persons with disabilities to participate in its programs and activities. If you anticipate needing any type of accommodation or have questions about the physical access provided, please contact the Department of Music at music@moravian.edu, or call 610-861-1650 at least one week prior to the event.

Moravian University Music Department

Music Since 1742

7:30 PM - Saturday, April 13, 2024
Foy Concert Hall - Hurd Campus

Moravian University Wind Ensemble

"Of Light and Dance"

Halcyon Hearts (2021) — Katahj Copley (b. 1998)

Light Descending (2023) — Kevin Poelking (b. 1988)
Purposeful Repertoire Consortium Premiere

Refractions (2023) — Kevin Poelking
Purposeful Repertoire Consortium Premiere

Simple Gifts: Four Shaker Songs (2002/2020) — Frank Ticheli (b. 1958)
I. In Yonder Valley
II. Dance
III. Here Take This Lovely Flower
IV. Simple Gifts

Havendance (1985) — David Holsinger (b. 1945)

Cyprian Suite (2004) — Carol Barnett (b. 1946)
I. Servikos
II. Aya Marina
III. Exomológhisis
IV. Agapis Tin

Aurora Borealis (2016) — Rossano Galante (b. 1967)

Moravian University Wind Ensemble
JoAnn Wieszczyk, *conductor*

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Moravian University Wind Ensemble
JoAnn Wieszczyk, *conductor*

Piccolo
Lindsay Detwiler

Flute
Lyana Cintron
Angela Chen+
Lindsay Detwiler
Jennifer Hall
Alexis Nemeth+
Matthew Tomko
Julianna Thompson*

Clarinet
Mary Devine
Joshneil Ferguson
Ashley Golden*
Amanda Koehler
Morgan Martin
Delaney Morton
Sean O'Boyle
Ben Smith

Bass Clarinet
Sam Rosas

Bassoon
Jacob Manning*
Signe Ruško+

Alto Saxophone
Nicole Bellesfield*
Briana Fehnel+
Kenneth Shade-Rania+
Alondra Torres Ramirez
Megan Zeruth

Tenor Saxophone
Lauren Phillips
Caesar Rosario
Andreanna Spadavecchia*

Baritone Saxophone
Andreanna Spadavecchia
Enrique Morales

Trumpet
Ethan Hawkes+
Brent Hepner
Don Kemmerer
Lianna Krouse*+

French Horn
Nancy Beitel-Vessels
Nikki Guido*
Cade Peifly+
Nancy Riggins

Trombone
Owen Cassel
Philip Wieszczyk

Euphonium
Catherine Forrester

Tuba
Madison Finegan+

Percussion
Amal Shokr+
Alana Strock

**denotes section leader*
+denotes senior

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About the Director

Dr. JoAnn Wieszczyk, *conductor*, is the Director of Instrumental Music at Moravian University. She conducts the Wind Ensemble, teaches courses in music history and theory, and directs the Moravian Greyhound Marching Band. Wieszczyk earned a Doctorate of Music in Conducting: Band & Wind Ensemble from the University of Michigan. During her time at Michigan she assisted the concert and athletic bands as a graduate student instructor. Wieszczyk also earned a Master of Music in Wind Band Conducting from the University of Minnesota - Twin Cities with secondary areas of study in choral conducting and arranging. She has a Bachelor of Music Education degree from Temple University with a Concentration in Flute. Prior to pursuing graduate degrees, Wieszczyk was the Director of Bands at the Philadelphia Performing Arts Charter: A String Theory School. A founding member of the Saint Francis University Marching Band staff, she served as the woodwind assistant at each summer band camp from 2012–2016. Additionally, Wieszczyk helped establish Settlement Music School's first band ensemble with the Music Education Pathways Program. She is a member of the College Band Directors National Association (CBDNA), National Association for Music Education, and Kappa Kappa Psi. She also performs with the South Jersey Flute Choir.

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100% of the proceeds
from Moravian University Music Department concerts
directly support our music programs.
Thank you !

About the Music

Halcyon Hearts | Katahj Copley

Love does not delight in evil but rejoices with the truth,
It always protects, always trusts, always hopes, always perseveres. Love never fails.

Halcyon Hearts is an ode to love and how it affects us all. Halcyon denotes a time where a person is ideally happy or at peace, so in short **Halcyon Hearts** is about the moment of peace when one finds their love or passion. The piece centers around major 7th and warm colors to represent the warmth that love brings us. The introduction – which is sudden and colorful – symbolizes the feeling of the unexpected journey it takes to find love. Using the colors and natural energy of the ensemble, we create this sound of ambition and passion throughout the work. No matter what race, gender, religion, nationality, or love, we all are united with the common thread of passion from the heart. This piece was written in dedication to those who love no matter which negativity is in the world; do not allow hate and prejudice to guide the way we live our lives. Always choose love and the halcyon days will come.

Program note from the score

Light Descending |Kevin Poelking

Light Descending draws its inspiration from the counterintuitive idea that as we move downward, away from the sunlight, the world can become even more magnificent. The music begins in full light with a Grandioso introduction, representing the more obvious beauty that we can see every day. The work is anchored by an eighth note ostinato which is intentionally ambiguous as to whether it is ascending or descending, representing that physically moving lower does not necessarily mean the same emotional response. Toward the end of the work, the Grandioso from the introduction returns as if to show that if we are willing to find it, the beauty above can be found below.

Program note by composer

Refractions| Kevin Poelking

Physics- the fact or phenomenon of light, radio waves, etc. being deflected in passing obliquely through the interface between one medium and another or through a medium of varying density. Change in direction of propagation of any wave as a result of its traveling at different speeds at different points along the wave front.

-from Oxford Languages

While it can be played as a stand-alone piece, this work was written to be performed in tandem with **Light Descending**. The two pieces were part of the 2023 Purposeful Repertoire Consortium and were composed with the musical elements and the theme of "light" in common to create separate by complimentary works. (Similar to the common practice of performing Grainger's *Irish Tune* with the shorter *Shepherd's Hey*.) *Program note by composer*

Simple Gifts: Four Shaker Songs | Frank Ticheli

My work is built from four Shaker melodies -- a sensuous nature song, a lively dance tune, a tender lullaby, and most famously, *Simple Gifts*, the hymn that celebrates the Shaker's love of simplicity and humility. In setting these songs, I sought subtle ways to preserve their simple, straightforward beauty. Melodic freshness and interest were achieved primarily through variations of harmony, of texture, and especially of orchestration.

The first movement is a setting of *In Yonder Valley*, generally regarded to be the oldest surviving Shaker song with text. This simple hymn in praise of nature is attributed to Father James Whittaker (1751-1787), a member of the small group of Shakers who emigrated to America in 1774. My setting enhances the image of spring by turning the first three notes of the tune into a birdcall motive.

The second movement, *Dance*, makes use of a tune from an 1830s Shaker manuscript. Dancing was an important part of Shaker worship, and tunes such as this were often sung by a small group of singers while the rest of the congregation danced. One interesting feature in my setting occurs near the end of the movement, when the brasses state the tune at one-quarter speed, in counterpoint against the woodwinds who state it at normal speed.

The third movement is based on a Shaker lullaby *Here Take This Lovely Flower*, found in Dorothy Berliner Commin's extraordinary collection, *Lullabies of the World* and in Daniel W. Patterson's monumental collection *The Shaker Spiritual*. This song is an example of the phenomenon of the gift song, music received from spirits by Shaker mediums while in trance. Although the Shakers practiced celibacy, there were many children in their communities, including the children of recent converts as well as orphans whom they took in. Like many Shaker songs, this lullaby embodies the Shakers' ideal of childlike simplicity.

The finale is a setting of the Shakers' most famous song, *Simple Gifts*, sometimes attributed to Elder Joseph Bracket (1797-1882) of the Alfred, Maine, community, and also said (in Lebanon, New York, manuscript) as having been received from a Negro spirit at Canterbury, New Hampshire, making *Simple Gifts* possibly a visionary gift song. It has been used in hundreds of settings, most notably by Aaron Copland in the brilliant set of variations which conclude his *Appalachian Spring*. Without ever quoting him, my setting begins at Copland's doorstep, and quickly departs. Throughout its little journey, the tune is never abandoned, rarely altered, always exalted.

Program note by composer

Havendance | David Holsinger

For her earliest holiday costume, my daughter Haven wanted to be dressed as a ballerina. It was a passion that has not stopped to this day.

Havendance was the first of the "children's dances." I was teaching at the time of its composition in Chillicothe, Missouri, and the former band director, Claude T. Smith and I were asked to write pieces for the anniversary concert of a North Central Missouri honor band. Haven was eight and constantly leaping and dancing about the house, and she seemed the perfect subject for a "dance" piece. Thus, **Havendance**.

Twenty years and many printings later, **Havendance** still represents her passion; however, I must say, that if Haven really had to dance to this piece today, her toe shoes would probably smoke!

Program note by composer

Cyprian Suite| Carol Barnett

The **Cyprian Suite** is one of a series of works written following a trip to Cyprus in 1999. Each of its four movements is based on a Cypriot folk song. The first, *Servikos*, is an instrumental dance in Serbian style, often played on the violin. In the second, *Lullaby*, a mother asks Saint Marina to take her baby to the world of sweet dreams and bring it safely back. She entrusts her baby to sleep, which will take her child and give it back to her grown up like a cypress tree, with branches extending from East to West. In the third, *Exomológhisis*, a man who had a lot of love affairs went to his priest to confess. The priest advised him to start a new life and stop having affairs. The man replied, "Father, if you deny the Holy Communion and the Divine Service, then I will deny love." In the last song, the singer complains, "I loved her from the bottom of my heart, but she was indifferent, and I have suffered."

Program note from publisher

Aurora Borealis | Rossano Galante

The glittering aurora borealis, or northern lights, as they are better known, are depicted in a lushly stated main theme with the full ensemble. It begins in a 4/4 meter and then, like the ever-changing lights themselves, transforms into 7/8, giving the opening an exciting forward motion, led by trumpets and accompanied by woodwind and low brass ostinati. The composition continues with a romantic, lyrical section which depicts the beauty and mystery of the lights. The piece culminates with an exciting recapitulation of the main theme, concluding with riveting brass fanfares.

Program note from publisher

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Moravian University Music Department

Music Since 1742

1:00 PM - Sunday, April 14, 2024
Foy Concert Hall - Hurd Campus

Moravian University Jazz Festival
Jazz Vocal - Jazz Fusion
Jazz Combo I - Jazz Combo II
BIG Band

1:00 PM

Strollin' (1960) — Horace Silver (1928-2014) / *lyrics*: Lora Sherrodd

I Wish You Love (1942) — Charles Trenet (1913-2001) / *lyrics*: Albert Beach (1925-1997)

I Thought About You (1939) — Jimmy Van Heusen (1913-1990) / *lyrics*: Johnny Mercer (1909-1976)

Misty (1954) — Errol Garner (1921-1977) / *lyrics*: Johnny Burke (1908-1964)

Jazz Vocal Ensemble
Lora Sherrodd, *director*
Jayden Daniels - Joshneil Ferguson - Nina Worsely - Samantha Ulianni, *vocals*
Joshneil Ferguson, *piano* - Bill Rupp, *bass* - Larry Shaw, *drums*

Minority (1953) — Gigi Gryce (1925-1983)

Social Call (1956) — Gigi Gryce

Yardbird Suite (1946) — Charlie Parker (1920-1955)

Falling in Love with Love (1938) — Richard Rodgers (1902-1979) / *lyrics*: Lorenz Hart (1895-1943)

Strollin' with Pam (1955) — Phil Woods (1931-2015)

Jazz Combo I
Tony Gairo, *director*
Nick Mancini, Coby Gumulak, *saxophones*
Christian Beebe, *piano* - Bill Rupp, *bass* - Kristian Wright, *drums*

2:30 PM

Povo (1972) — Freddie Hubbard (1938-2008)

Sea Journey (1967) — Chick Corea (1941-2021)

Midwestern Nights Dream (1976) — Pat Metheny (b. 1954)

Until Dawn (2001) — Kim Waters (b. 1965)

Song for ("Bill Bauman") Bilbao (1983) — Pat Metheny (b. 1954)

Jazz Fusion Ensemble
Paul Rostock, *director*
Bill Rupp, *trumpet* - Owen Levan-Uhler, *saxophone*
Amal Shokr, vibes, *percussion* - Cal Deifer, *bass* - Chase Kratzer, *drums*

Road Life (1987) — James Williams (1951-2004)
as played by Mulgrew Miller (1955-2013)

Eighty One (1965) — Ron Carter (b. 1937)

Green Apples — Calvin Deifer ('26)

Casa Forte (1986) — Edu Lobo (b. 1943)

Jazz Combo II
Dave Roth, *director*
Eva Oakes, *piano* - Calvin Deifer, *bass* - Joshneil Furgeson, *drums*
Elias Breininger, *guitar* - Sean Costanzo, *alto saxophone*
Owen Levan-Uhler, *alto saxophone* - Emilie Gottbrecht, *vocals & valve trombone*

4:00 PM

Ya Gotta Try (1970) — Sammy Nestico (1934-2021)

Oclupaca (1968) — Duke Ellington (1899-1974)

I've Got My Love Keep Warm (1936) — Irving Berlin (1888-1989)

featuring Nina Worsley, *vocal*

Almost Like Being in Love (1947) — Frederick Loewe (1901-1988) /
lyrics: Alan Jay Lerner (1918-1986) / *arr*. Nelson Riddle (1921-1985)

featuring Reid Clymer, *vocal*

A Portrait of Jennie (1948) J. Russell Robinson (1892-1963) /
lyrics: Gordon Burdge (1956-2021) / *arr*. Rob McConnell (1935-2010)

The Chicken (1969) Alfred James (PeeWee) Ellis (1941-2021) / *arr*. Kris Berg (b. 1961)

- intermission -

Orange Colored Sky (1950) Milton Delugg (1918-2015) & William Stein(1917-2009)
arr. Pete Rugolo (1915-2011)

featuring Reid Clymer, *vocal*

When Your Lover Has Gone (1938) Einar Aaron Swan (1903-1940)/ *arr*. Nelson Riddle

featuring Nina Worsley, *vocal*

Miss Fine (1963) Oliver Nelson (1932-1975)

Just One of Those Things (1935) Cole Porter (1891-2014) / *arr*. Buddy Bregman (1930-2017)

featuring Sapphire Johnson, *vocal*

CONFERRING OF AWARDS
and
Acknowledgement of Seniors

Feel Like a Natural Woman (1967) Gerry Goffin (1939-2014), Carole King (b. 1942),
& Jerry Wexler (1917-2008)/ *arr*. Paul Murtha (b. 1960)

featuring Sapphire Johnson, *vocal*

Two-Three's Adventure (2010) Carlos Henriquez (b. 1979)

Moravian University Big Band
Dr. Neil Wetzel, *director*

WITH SPECIAL GUEST ARTIST
HECTOR ROSADO, *congas*

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Moravian University Big Band

Dr. Neil Wetzel, *director*

Josequiel Guerra, *student director* - Spencer Guido, *student director*

WITH SPECIAL GUEST ARTIST - HECTOR ROSADO, *congas*

Voice
Sapphire Johnson
Nina Worsley
Reid Clymer (*Senior*)

Saxes
Coby Gumulak, *alto*
Nick Mancini, *alto*
Josequiel Guerra, *tenor* (*Senior*)
Kenny Shade-Rania, *tenor* (*Senior*)
Enrique Morales, *bari*
Justin Fulford, *bari*

Trumpets
Joe Marchishin (*community*)
Spencer Guido (*Senior*)
Martina Fedorowicz (*Senior*)
Bristan Colon (*community*)

Trombones
Mark Browning (*community*)
Owen Cassel
Jay Daniels
Yami Gottbrecht

Guitar
Alec Smith (*Senior*)
Eli Breininger (*alternate*)

Piano
Christian Beebe
Joshneil Ferguson
Eva Oakes

Drums
Kristian Wright
Hayden Slate (*community*)

Bass
Calvin Deifer

Vibes
Gracie Kemmerer (*Senior*)

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About the Artists

Hector Rosado, *guest artist, congas*, is an internationally acclaimed Latin jazz percussionist currently based in the Lehigh Valley. He has played and toured internationally appearing in concert in Israel, Turkey, Brazil, Japan, Australia, and many European countries. His broadcast credits include multiple performances on *The Tonight Show*, hosted by both Johnny Carson and Jay Leno. He has backed many renowned performers such as Salsa legend Celia Cruz, Tito Puente, Dave Valentine, and pop singer David Byrne. Currently living in Bethlehem, Rosado grew up in the Lehigh Valley and began performing in public at the age of 10. As a youngster, he often could be found practicing outside in local parks, and participating in ad hoc community "rumba sessions" with other musicians. In his teens he moved to NYC and started playing with well-known Salsa groups and other types of bands in numerous clubs and concert venues, becoming a fixture on the NYC Salsa scene. As mentioned previously, Mr. Rosado resides in Bethlehem and has led his own very successful bands, including his most recent ensemble "Hector Rosado Y Su Orq Hache" (founded in 2001) and the "Hector Rosado Latin Jazz Ensemble Siete" (2008).

Dr. Neil Wetzel, *Big Band director*, is Professor of Music as well as the Chair of the Department of Music at Moravian University (Bethlehem, PA). He is the Director of Jazz Studies, directs the Moravian University BIG Band, and teaches saxophone. He holds both a BM (Jazz Perf.) and MAT degrees from the University of the Arts in Philadelphia, and a doctorate in music education (EdD) at Teacher's College, Columbia University. His dissertation focused on teaching jazz improvisation. Dr. Wetzel has worked and played with Clark Terry, Phil Woods, Terrell Stafford, Stanley Turrentine, and Bobby Watson. He has backed many great performers including Tony Bennett, Natalie Cole, Bob Hope, Johnny Mathis, Bernadette Peters, the Temptations, and the Four Tops. Currently he performs regularly with the Water Gap Jazz Orchestra and the Celebration Saxophone Quartet (founded by Phil Woods). He recorded with the Philly Pops Orchestra and singer Patti Page in Carnegie Hall; the resultant CD won the 1999 Grammy for best Pop Traditional Performance. He can be heard on four CDs with jazz pianist Eric Mintel: *Live*, *Hopscotch*, *Dynamo* and *Four on the Floor*. Dr. Wetzel has also played and taught at the Karel Velebny Summer Jazz Workshop in Frydlant, Czech Republic and the Lana Jazz Festival in Lana, Italy. He can also be heard on the CD *Simone on Simone* (released on Koch Records) featuring the jazz singer, Simone with the Rob Stoneback Big Band. Wetzel's first solo CD as leader, *Misunderestimated*, was released in January 2010. He has also recorded and toured with the Rosta Fras-Skip Wilkins IQ, the International Quintet. The group's first CD, *Frydlant Nights*, was recorded and released by the Czech Radio Prague label in 2010. His most recent CD release as leader, *Cowboys in Capes* (2014), is available through his website *www*.

neilwetzel.com. His two most recent recordings include *After Midnight in Frydlant; the Neil Wetzel—Gary Rissmiller 5 O'Clock Big Band* (released in 2016 on the Arta record label, based in the Czech Republic), and *The Saxophone Music of Phil Woods; Celebration Saxophone Quartet* (released 2018 on the Minsi Ridge label).

Saxophonist, flutist, clarinetist, and jazz composer **Tony Gairo** keeps an active calendar of professional performances, engagements, sessions, and shows while maintaining a busy teaching studio at Moravian University. A 27-year member of the Jazz faculty at Moravian, he has directed Jazz Combo 1 since 1998 and was awarded the T. Edgar Shields Prize for Distinguished Studio Instruction in 2006. He directed and conducted the Big Band at Muhlenberg College from 2009 through 2022 and is a former Vice President of the Pennsylvania Jazz Collective (2015-18). A graduate of Temple University (B.M. Jazz Saxophone Performance 3.79 GPA), Tony performs with some of the best and most successful musicians in the industry including Johnny Mathis, Clay Aiken, the Temptations, the Four Tops, and Maria Schneider. He has appeared on stage with such luminaries as Phil Woods, Bob Dorough, Natalie Cole, Al Martino, David "Fathead" Newman, and Bud Shank, among others. Tony was named in the Top 10 (#6) Jazz Flute Players of 2018 by *Jazz Station*. Voted the 2004 Jazz Musician of the Year – Lehigh Valley (PA) by *Pulseweekly Magazine*, he has composed more than 100 works for Large Jazz Ensembes including *The Real Book of Gig* (2012), a jazz opera; *Collaboration* (2007), a jazz ballet; *The Never-Ending Saga of Elli and Griff* (2013), a jazz suite which featured Phil Woods; and albums, *Treacherous* (2005), on Sea Breeze Jazz Records which was nominated for a Grammy Nomination and *Crosscurrents* (2019) on the Acoustical Concepts label. Mr. Gairo is an alumnus of the prestigious BMI Jazz Composers Workshop in New York City (2001-2006) where several of his compositions for Big Band premiered. He conducted the BMI (NY) Jazz Composers Orchestra in concert at Merkin Hall, New York in 2003, 2004, and 2005. Whether as sideman or leader, Tony gigs several nights a month and records in disparate musical settings throughout the Northeast Corridor of the United States, primarily in and around the Lehigh Valley of PA, the Greater Philadelphia region, and Princeton, NJ with such ensembles as the Franklin Alison Orchestra, the Rob Stoneback Big Band, the Hoppin' John Orchestra, Marah, his own Cross Current Big Band whose book is comprised entirely of his works for Jazz Orchestra, and many others. Tony leads various duos, trios, quartets, and quintets including with guitarist/vocalist Jason Wolbach and vocalist/pianist Lou Lanza. He is immensely grateful to have had the good fortune and resilience to have made a career of music and absolutely loves what he does for a living.

Paul Rostock, *director*, has served on the faculty of Moravian University since 1991 as an artist/lecturer and instructor of Double Bass and Bass Guitar. He has directed jazz ensembles, taught private jazz history and improvisation practicums, and directs the Moravian Fusion Ensemble. He is a past recipient of the T. Edgar. Shields Award for distinguished studio instruction and was named the PA Jazz Collective Artist of the Year in 2017. Paul also serves as a director for the annual Moravian Summer Youth Jazz Camp. A versatile and sought after freelance musician, Paul has appeared with many popular artists including Frank Sinatra, Michael Feinstein, Steve Tyrell, Monica Mancini, Maureen McGovern, Toni Tennille, and Bobby Rydell. Jazz artists Paul has performed with include Maynard Ferguson, Phil Woods, Clark Terry, Urbie Green, Randy Brecker, Stanley Turrentine, Bob Dorough, Carl Fontana, Jon Faddis, and David "Fathead" Newman. Regional jazz groups Paul is associated with include Rob Stoneback Big Band, David Leonhardt, Marko Marcinko, and La Cuchina. He has appeared at the COTA Jazz Festival since its inception and often performs at the Deer Head Inn. Paul toured and recorded with the late vocalist Frank Sinatra, Jr. for more than three decades.

David Roth, *director*, performs in a wide variety of both classical and jazz settings. He holds both BA and BM degrees from Moravian College (now University), and he has earned a Master's degree in classical piano performance at the University of Northern Colorado. David has performed with many well-known jazz musicians including Steve Gilmore, Glenn Davis, Paul Rostock, Larry McKenna, Tony Marino, Warren Vache Jr., Bill Goodwin, Gene Perla, and Terell Stafford. In the commercial music field, David has done keyboard work for Regis Philbin and Michael Amante, and he has given many live performances on radio and television. Under the direction of composer Sean O'Boyle, David recorded the sound track for the film, *Damn Fine Dining* starring David MacLean and Sam Dugmore. David is the creator of the Moravian's Summer Jazz Camp that includes students grades 8-12. David also conceived and led the development of the strategic education alliance between MTNA and the International Association for Jazz Education. He is the main author of the MTNA/IAJE Jazz Studies Guide that includes a forward by Dave Brubeck. David created two community concert programs, Peak View Jazz, in Colorado, and Art's in Your Backyard, in the Lehigh Valley, PA. David serves as Minister of Music at St. John's United Church of Christ in Fogelsville, PA.

Lora Sherrodd, *director*, is presently the Jazz Voice instructor at Moravian University where she teaches applied voice lessons and directs the Jazz Vocal Ensemble. Sherrodd's artistry primarily focuses on improvisation, vocaleses, and composition, writing music that upholds the tradition of jazz along with lyricism fit for the twenty-first century. Sherrodd received her M.M. in Jazz Studies from Temple University and her B.A. in Music with an emphasis in jazz and a minor in African American and Diaspora Studies in 2020 from University of Wyoming. She studied under Dr. Ben Markley, Dr. Katrina Zook, Bruce Barth, Najwa Parkins, and Chelsea Reed. She continued her professional relationship with

Ben Markley to include writing lyrics for Markley's original music showcased in an asynchronous recording entitled *Lora Sings Markley*. She has also written lyrics for Elio Villafranca's *I Belong to You* featuring Grammy Award winning vocalist Cécile McLorin Salvant. In 2019, Lora earned a grant from The University of Wyoming to record her debut album, *287*. Her recording, *I'm Gonna Lock My Heart (And Throw Away the Key)* from this record earned her a 2020 *Downbeat Magazine* Student Music Award for outstanding jazz vocal solo. As an undergraduate, Sherrodd was the featured vocalist in the Wyoming Jazz Ensemble and appeared on a number of recordings, including the University's *Winds of the Snow*ys as well as *All In by John May*. She worked regularly with the Wyoming Jazz Ensemble, earning the opportunity to perform with many notable musicians, such as Nate Werth at Dazzle in Denver with the University of Wyoming Steel Pan Band, Greg Osby with the Wyoming Jazz Ensemble, and Terell Stafford at Dizzy's Club Coca-Cola with the Wyoming Jazz Ensemble in New York City.

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JAZZ @ MORAVIAN

by Neil Wetzel & Anthony Gairo

Jazz ensembles and classes have been a staple of the Moravian College and University for decades. One of the college's first official jazz ensemble was led for a time by Moravian College faculty member Rudy Ackerman; he led the group in the 1960s and 1970s. Even though Ackerman was a visual artist and professor in the Art Department, he was also an accomplished saxophonist and jazz musician. In the late 1970s, the "Brethren" (as the jazz ensemble was known back then) came under the auspices of the Music Department and led by a string of directors, including Professor Emeritus Don Speith, Moravian's music director of the Moravian College Community Orchestra up to his passing in the fall term 2023.

Over the years there have been numerous "small" jazz ensembles which led to the slate of small jazz ensembles featured on today's concert. The mission and objective of small jazz ensembles vary significantly for that of the Big Band.

The mission of the Moravian University BIG Band encompasses two major goals: education and outreach. Students explore and learn (through audio and traditional research) about jazz composers, performers, band leaders, repertoire, and jazz history, through the lens of a traditional big band instrumentation. Band members not only learn about and prepare pieces for the end-of-term concert, but also share their musical insights and talents with audiences to promote and contribute to the jazz canon. This is accomplished through on-campus and off-campus performances as well as commissions of new and innovative jazz works. Performances include end-of-semester concerts, playing at important college events, jazz festivals, workshops, and community concerts. At this performance, the group presents jazz masterworks and repertoire from the Duke Ellington, Irving Berlin, Cole Porter, and Oliver Nelson libraries. While the BIG Band has around 20-26 members in any given semester, the smaller jazz ensembles usually number 5-8 members.

The Moravian University Jazz Combos and small ensembles are made up of elite musicians. Members are chosen by audition; many are music majors, but membership is not limited to students pursuing a bachelor's degree in music. Instruction in small jazz groups focus more on soloing and the art of playing in a smaller ensemble, providing more opportunities to develop improvising skills. These groups not only play standards from the jazz canon, but also experiment with new timbres and innovative forms, seeking to expand the vocabulary and scope of small group jazz performance practice.

Past and present group members of Moravian's jazz ensembles perform professionally throughout the Eastern seaboard region of the US and beyond. Many alums have gone on to study at some of the most prestigious graduate jazz programs including North Texas State, California Institute of the Arts, Eastern Illinois University, University of the Arts (Phila.), Temple University, and Boston Conservatory.

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ABSTRACTS

Student Oral Presentations I

212 Reeves Library

Tuesday, April 16, 2024

9:15 – 10:40 AM

Title: **Outlining Habits and their Effects on the Writing Process in Different Disciplines**
Student: Gianna Tully
Advisor: Dr. Crystal Fodrey
Location: 212 Reeves Library 9:30 AM - 9:50 AM

Outlining is an important step of the writing process and student perceptions can change if and how students use prewriting strategies such as outlining. Using Economics scholar Matthew J. Baker's study as a I guide, I have created a survey-based qualitative study, asking students from Moravian writing-intensive courses about their perceptions of the writing process across academic disciplines. I will be presenting some preliminary findings from my research and discussing how understanding student perceptions about outlining can be beneficial for writing instruction at Moravian.

Title: **Parents' Perceptions of Early Intervention for Young Children with Hearing Loss**
Student: Rosie Symia
Advisor: Dr. Jean DesJardin
Location: 212 Reeves Library 9:55 AM - 10:15 AM

The purpose of this SOAR research project was to explore parents' perceptions of early intervention (EI) services in PA for young children who are Deaf and Hard of Hearing (D-HH). Specifically, this mixed-methods study investigated parents' perspectives about their providers' engagement and teaching practices in EI, and their own perception of self-efficacy (e.g., knowledge, confidence, beliefs) and involvement in EI practices. Research on parents' self-efficacy and involvement in their child's EI services consisted of the following components: 1) Thirty one-hour parent-researcher interviews (Pre-recorded); 2) The parents' responses on the Scale of Parental Involvement and Self-Efficacy–Revised (SPISE-R) form. Dr. DesJardin had previously collected the aforementioned information and research components, and then granted me access to this data throughout the duration of the project. Throughout this research process, I learned about and explored current research and EI practices for young children who are Deaf and Hard of Hearing. This insight allowed me to examine and create themes of the strengths and obstacles that parents of Deaf and Hard of Hearing children currently face, in terms of EI strategies/practices. I also looked for correlations between the parents' interviews and their written responses on the SPISE-R form, in terms of their self-efficacy and involvement in their child's EI services. The subjects of this study consisted of the families of a group of young children, ranging in age from 3 months to 5 years, who are currently receiving EI services.

Title: **In the Name of the Republic: Léger-Félicité Sonthonax, Race, and Slavery in 18th Century Haiti**
Student: Nathan Pynchon
Advisor: Dr. Heikki Lempa
Location: 212 Reeves Library 9:55 AM - 10:15 AM

Léger-Félicité Sonthonax was a French commissioner responsible for governing the colony of St. Domingue (Modern-day Haiti) from 1792-1797. On August 29th, 1793, he decreed the emancipation of all enslaved peoples under his jurisdiction – one of the first of its kind in the history of the Western Hemisphere. With this background, Sonthonax is an excellent case study to analyze the 18th-century French attitudes on race. In this research paper, I argue that, over the course of his stay in St. Domingue, Sonthonax's views on race and slavery became intertwined with those of class. Analyzing his public declarations and letters, I demonstrate how one French Republican built a race system based on his homeland's political and social structures.

Student Oral Presentations II

212 Reeves Library

Tuesday, April 16, 2024

10:50 AM - Noon

Title: **Unveiling the Masks of the Women Artists of Second Wave Feminism**
Student: Gianna Tully
Advisor: Dr. Liz Gray
Location: 212 Reeves Library 10:50 AM - 11:10 AM

This presentation discusses the biographies and work of four women artists who created art with feminist themes during the Second Wave Feminist Movement. The four women included in this presentation are Lucille Clifton, Audre Lorde, Adrian Piper and Ana Mendieta. Conversations about the intersections of artists' chosen identities and their perceived creative themes will be discussed using their biographies and artistic works as talking points. This presentation is reimagined from a DEI Office Friday Forum gallery talk given earlier in the year.

Title: **Systematic Revisions of Cosmetid Harvesters (Opiliones: Laniatores: Cosmetidae) in the Caribbean Islands**
Student: Cielo Disla
Advisor: Dr. Daniel Proud
Location: 212 Reeves Library 11:15 AM - 11:35 AM

With more than 6,650 species described worldwide, Opiliones (daddy longlegs or harvesters) represent the third largest order of arachnids. Endemic to the Neotropics, the family Cosmetidae contains more than 700 species of harvesters. Although it is the second largest family of harvestmen, an antiquated classification system and the lack of family-wide systematic revisions have made it difficult for researchers to study these animals. We examined the morphological characters that are useful in diagnosing cosmetid genera, and constructed a molecular phylogeny to evaluate the evolutionary relationships of Cosmetidae across several Caribbean islands (e.g., Puerto Rico, Cuba, Jamaica). In Cuba, we recovered a single clade of cosmetids. In Puerto Rico, we recovered two separate clades of cosmetids revealing that two ancestors arrived independently on Puerto Rico millions of years ago. We described the new genus *Borikenia* gen. nov., redescribed the type species *Borikenia luquillense* comb. nov., and described two new species. This work provides greater insight into the evolutionary history of island lineages in the Caribbean and demonstrates the importance of an integrative approach to taxonomic studies within this family.

Title: **Differences in Running Kinematics between Running on a Treadmill vs Overground in Recreational Runners**
Student: Owen Nahf
Advisor: Dr. Michael Steimling
Location: 212 Reeves Library 11:40 AM - Noon

This study investigated differences between running on a treadmill and over-ground in commonly evaluated kinematic variables, including foot strike pattern (FSP), vertical tibial acceleration (VTA), cadence, and vertical oscillation of the center of mass (VO). FSP, VTA, cadence, and VO have been associated with injury-related factors, including loading rates. Thirteen Healthy Recreational Runners who run at least ten miles weekly participated in this study(10 male, 3 Female). Participants ran over a 50-meter stretch of asphalt six times at a self-selected pace while running kinematics were collected. Participants were then asked to run on a treadmill at the same speed as the over-ground condition.

There were statistically significant differences in VTA ($p=.005$), cadence ($p=.01$), and VO ($p=.044$) between conditions. VTA was higher during the over-ground condition with a mean difference of 1.48g. Cadence was slower by an average of 5 steps/min during the over-ground condition. VO was higher during the over-ground condition by an average of .5 cm. 3 out of 12 runners changed their foot strike pattern during the treadmill condition. Kinematic variables commonly evaluated with running gait analysis performed on a treadmill should be interpreted cautiously as they may differ from an over-ground environment in recreational runners.

Student Poster Presentations I
Reeves Library
Tuesday, April 16, 2024
12:00 - 1:00 PM

Title: **Biomolecule-Binding, Cytotoxicity, and Cellular Targets of Novel Dirhodium Complexes**
Student: Gwen Kester
Advisors: Drs. Shari Dunham and Anastasia Thévenin
Location: Reeves Library

Several rhodium complexes have been explored to treat cancer throughout the years, however, none have made it to the clinic. For a rhodium complex to become a marketable cancer therapy, it has to be able to enter and kill cancer cells by interfering with important cellular processes and binding to molecules such as DNA or proteins. The ability for each complex to kill and enter cells, bind to DNA or protein, and interact with important cellular mechanisms is vital to assess its performance and compare it to known and marketable drugs. The focus of our work is to assess cancer-cell targeting characteristics of several novel dirhodium complexes and compare their capabilities to cisplatin, a well-known cancer therapeutic. The cytotoxicity, ability to enter the cell, and cell interactions are being examined in both cervical cancer (HeLa) cells and triple-negative breast cancer (MDA-MB-231) cells. Here, we discuss the relationship between chemical properties of the dirhodium complexes, their cellular targets, and their cell killing abilities. Importantly, we have identified complexes that are more toxic than a known chemotherapy drug, cisplatin, against cervical and breast cancer cells.

Title: ***Pagurus longicarpus*** **Foraging Under Different Conditions**
Student: Ebony Saccento
Advisor: Dr. Joshua Lord
Location: Reeves Library

Foraging is important for animals because it allows them to grow, reproduce, and have energy for other activities like movement and predator avoidance. We tested the foraging behavior of the hermit crab *Pagurus longicarpus* under acidic conditions to better understand their response to ocean acidification. The experiment consisted of a Y-maze (a maze that form a "Y" shape), with a food pellet and rock placed at opposing ends of the maze to see how effective the crabs were at finding the food. The goal was to compare the time it took for *P. longicarpus* to find the food, using both their visual and chemosensory ability, under control and acidified (pH 7.5) conditions. Our second goal was to determine whether vision or chemosensory ability playing a larger role in hermit crab foraging. We found that neither acidic conditions nor darkness impeded the foraging ability of *P. longicarpus* (correct decision ~80%). However, when the entire Y-maze had water with the odor of food (to mask chemosensory cues), crabs were largely unsuccessful at finding the food even when they could see the food pellet. Therefore, we concluded that chemosensory abilities play a larger role than vision in foraging with this species.

Title: ***Drosophila melanogaster*** **Rop Seizure Gene**
Student: Madelyn Ott
Advisor: Dr. Christopher Jones
Location: Reeves Library

Throughout the Spring semester, I have worked with Dr. Jones on an independent research project where I have investigated a gene in fruit flies (*Drosophila melanogaster*) associated with seizures. In humans, the gene STXBP1 can cause several neurological disorders including epilepsy, autism, seizures, and some muscular/movement disorders when mutated. Drosophila have a gene that is homologous to STXBP1, named Rop (short for Ras opposite). Throughout the semester I have utilized primary literature to develop a better understanding of the STXBP1 gene, as well as the Rop gene. I have also carried out my own experiments, crossing several different lines of fruit flies with the intention of assessing phenotypes associated with Rop. Some of the lines/crosses that I am focusing on include RNAi/Gal4 constructs, deletion/duplications, and sgRNA. I have carried out seizure tests, climbing assays, and physical examinations of the progeny of the crosses to determine if these experiments were successful in mimicking the effects of human STXBP1 mutations by altering expression of the Rop gene in flies. If I succeed in my project, it may serve as a useful model for STXBP1-related disorders in humans and make therapeutic testing easier.

Title: **Into the Storm: Investigating the Effects of Salinity and Burial on Morella Growth**
Student: Julia Lapinska
Advisor: Dr. Natasha Woods
Location: Reeves Library

In coastal environments, shrubs have encroached into grasslands due to warmer winter temperatures; however, it is unknown how stressors related with storm disturbance influences shrub survival and aboveground growth. The encroaching evergreen, native shrub, *Morella cerifera* (hereafter Morella) is protected from salt and sand stress by high dunes. When dunes are destroyed by storm overwash, the habitat can receive higher salt and burial disturbance. The goal of this study was to examine the independent influences of salinity, burial, and the combination of both on the growth of Morella. The experiment took place in a hoophouse. Treatments consisted of no burial or salinity (control), salinity only, burial only, and salinity x burial. Shrub growth (i.e., height and canopy growth) was monitored for 3 months. Burial had no effect on Morella seedlings height or canopy growth rates, but salinity and salinity x burial induced significant reductions in both height and canopy area growth rates ($p < 0.01$ for both). These results show that a one-time salinity disturbance of full strength seawater limits the growth of Morella seedlings, but sand burial has no effect. With projected increases in storms salinity exposure will be an important control on shrub encroachment.

Title: **Tilt-the-Die: A Mathematical Game**
Students: Geoffrey Kleinberg, Mariam Abdalla, and Alexis Jordan
Advisors: Drs. Trisha Moller and Michael Fraboni
Location: Reeves Library

Tilt-the-Die is a two-player turn-based game in which the players take turns adding to a shared total, trying to reach a given goal number. The game starts by rolling a die, and the number facing up is the initial total. With each turn, the player must tilt the die to one of the four neighboring faces, adding that number to the total. If the goal number is reached exactly, the player who moved last wins. If the goal number is exceeded, the player who moved last loses. Our research focused on analyzing winning strategies for this game with a standard 6-sided die, and with all possible variations of a 6-sided die. We found that the strategy is generally periodic. For most dice, the pattern of wins and losses forms a cycle of length 7, although some dice have cycles of length 8, 9, 14, and 28. We also looked at what happens if the faces of the die are labeled from k to k+5 instead of from 1 to 6.

Title: **Women in their World: A Detailed Analysis of Creative Genres Produced During Second Wave Feminism**
Student: Gianna Tully
Advisors: Drs. Liz Gray and Angela Fraleigh
Location: Reeves Library

Poetry and visual art are two genres that have historically been used as activism for different movements. For women working as artists during the Second Wave Feminist movement, poetry and visual art were both relied upon genres, but both had different strengths and limitations. Through a rhetorical and aesthetic analysis of work produced by Carolee Schneemann, Hannah Wilke, Adrienne Rich and Lucille Clifton, conclusions can be drawn about how poetry and visual art were used differently to support themes of bodily autonomy during the prominent feminist movement of the '60s and '70s.

Title: **Quantification of Bioavailable Heavy Metals in Soil Layers**
Student: Gabriel (Brie) Jacobs
Advisor: Dr. Alison Holliday
Location: Reeves Library

Steel production produces heavy metal waste, like cadmium and lead. The banks of Sand Island face the old Bethlehem Steel plant, so determining the concentration of metals present deeper in the soil could demonstrate how the metal concentration in the soil have changed over time. The metals could be in higher concentration in certain layers due to runoff, deposition by the Lehigh River, or are present from when the steelworks were still active. A soil

core was taken from Sand Island, Bethlehem, PA, and split into one-inch segments. These segments were analyzed using graphite furnace atomic absorption spectroscopy (GFAAS) to quantify the concentrations of bioavailable lead and cadmium in each segment. The segmentation was done to determine if there were trends in the concentrations the deeper the soil was.

Title: **k-Total Bondage in Graphs**
Student: Jean-Pierre Appel
Advisor: Dr. Nathan Shank
Location: Reeves Library

Let G = (V, E) be a finite undirected graph with no isolated vertices.
A set S ⊆ V is said to be a total dominating set of G if every vertex in V is adjacent to some vertex in S. The total domination number, γt(G), is the minimum cardinality of a total dominating set in G. We define the k-total bondage to be the minimum number of edges to remove from G so that the resulting graph has a total dominating number at least k more than γt(G). In this work we establish general properties of k-total bondage, exact values for certain graph classes including paths, cycles, and wheels, and obtain upper bounds for complete and complete bipartite graphs.

Title: **Exploring Ethnic Influences on Pediatric Obesity**
Student: Pia Mazzella DiBosco
Advisors: Drs. Karen Groller and Colleen Payton
Location: Reeves Library

Obesity rates are rapidly growing in minority groups, specifically in black and Latino populations when compared to white peers. Studies on pediatric obesity in adolescence targeted the voices of families and healthcare workers more compared to adolescents with obesity. The purpose of this integrative review (IR) was to describe the current state of education practices and ethnic influences in the management of pediatric obesity during adolescence. This IR aimed to answer what education assists with managing obesity in adolescents from diverse ethnic backgrounds and how effective their education program currently is. The information from this IR will be used to develop a tool to capture adolescent voices. Articles retained on the CINAHL database (n=64) were published from 2013-2023, peer-reviewed, written in the English language, targeted ages 13-18 and 19-44, and focused on pediatric obesity management. These articles were further assessed for appropriateness, resulting in a final selection (n=8). Cultural behaviors and educational influences were two themes that emerged from the data. The results of this IR may inform nurses on how to assist adolescents with their obesity management by encouraging the development of individualized plans that focus on ethical considerations.

Title: **Tetrominos**
Students: Jean-Pierre Appel, Victoria Harper, Jonathan Walsh, and Elina Georges
Advisors: Drs. Trisha Moller and Michael Fraboni
Location: Reeves Library

In this paper we study Tetrominos, a cram-like game with Tetris shaped pieces. For this game we consider only the T shaped piece and its rotations on boards of size 5×5 or smaller.We look at Tetrominos as an impartial two player game. By doing so, we are able to prove the Grundy values of specific games. While we were studying this game, we were able to show the winning strategy for a game with a pieceset of one or two variations of the T shaped piece. We conclude with a result that states how a winning strategy for one game can be rotated to yield another winning strategy for a similar pieceset.

Title: **Food Fights: Feeding Competition in male Mantled Howler Monkeys (*Alouatta palliata*)**
Student: Dwight Holloway
Advisor: Dr. Sara McClelland
Location: Reeves Library

Food quality impacts the activity budget and fitness of Mantled Howler Monkeys (*Alouatta palliata*) and may contribute to a higher frequency of food competition. Data was collected at Camaquiri Conservation Initiative (CCI) to study howler monkeys' feeding behaviors in fruit, flowers, and leaf only trees. Over seven days, data was collected on male competition using focal, interval sampling and all occurrence data. Focal animal was the first male howler monkey seen in the group. The distance to the nearest monkey was recorded once the focal male mantled howler monkey was identified. A behavioral catalog was used for collecting data. Data analysis is ongoing. We found when comparing behaviors in different types of feeding trees, there was more movement, less resting in the leaf when compared with fruit and flower trees. More aggression was observed in leaf trees when compared to fruit or flower trees. While these are preliminary results, our data showed that multiple variables (not only food quality) may impact feeding competition. Spatial distribution of resources and the abundance of the food source impacting the behavior of male mantled howler monkeys. This work may help focus preservation efforts of tree types and food resources to better conserve mantled howler monkeys.

Title: **The synthesis of 1-(diphenylamino)-2-propanone for Radical Arylation studies**
Student: Jefferson Cano Menses
Advisor: Dr. Godfred Fianu
Location: Reeves Library

In this study, 1-(diphenylamino)-2-propanone was synthesized via a multi-step synthetic approach and was analyzed using FTIR, NMR, and GC-MS instruments. In this research, it was discovered that reacting diphenylamine with 3-chloro-2-methyl-1-propene via a substitution reaction with subsequent oxidation using osmium tetroxide and sodium periodate was a much more efficient synthetic route for making the desired ketone. The synthesized ketone will be used to conduct radical arylation reactions to form indoline derivatives that are basic motifs found in common antitumor agents. Primarily studies show although titanocene (III) chloride efficiently catalyzes the radical arylation of diphenylamino epoxides, titanocene (III) chloride does not catalyze the radical arylation of the synthesized diphenyamino ketone. Further studies will explore the viability of other single electron reductants.

Title: **Automatic Customization of Parameterized 3D Models**
Students: Seth Coleman and Zach Bingaman
Advisor: Dr. Jeffery Bush
Location: Reeves Library

We present the 3D model customization system of 3DAdapt, an app for discovering printable 3D models tuned for occupational therapy. The customization system allows users to enter custom dimensions into the app's model viewer and see the adjustments in real-time. The two 3D modeling programs supported for customizable models are OpenSCAD and Onshape. They both implement parameterized models, that is the models are computed based on variables. However, they have incredibly different formats. We took these formats and created an internal, universal, JSON representation for all 3D models in our system, including these changeable variables, to be used throughout our platform. OpenSCAD was converted through a process involving the OpenSCAD CLI, using Python to parse the text output to create the internal representation. The web-based system of Onshape required a much different process accessing the Onshape web API. This code generates a version of the model modified by user-specified variables and converts it to the internal representation for 3DAdapt's backend. The variable customization system within 3DAdapt exemplifies the importance of flexible data formats and the importance of planning the communication between server and client in a large, interconnected system.

Title: **Phylogenetic Analysis of the Cosmetidae from the Dominican Republic**
Student: Melody Fermin
Advisor: Dr. Daniel Proud
Location: Reeves Library

Harvestmen are incredibly diverse throughout the Greater Antilles, but most families are very poorly studied. We identified more than 12 morphospecies of cosmetid harvestmen from the Dominican Republic (DR), of which only three represent previously described species: *Cynortoides* v-album, *Metacynortoides bilineata*, and *Arucillus armasi*. We extracted DNA from 18 specimens from DR and amplified three gene regions (16S, COI, and 28S). We constructed a molecular phylogeny to investigate the phylogenetic relationships of cosmetid species in DR, and to determine whether cosmetids arrived in DR once or multiple times. We also discuss some puzzling findings regarding the species in the genus *Arucillus*.

Student Poster Presentations II
Reeves Library
Tuesday, April 16, 2024
4:00 - 5:00 PM

Title: **Does PTEN, a Dual Specificity Phosphatase, Dephosphorylate Connexin 43?**
Student: Victoria Donovan
Advisor: Dr. Anastasia Thévenin
Location: Reeves Library

Our laboratory has focused on understanding Connexin 43's (Cx43) inhibition mechanism of a cancer-causing protein called Src. We have identified multiple phosphorylation events on Cx43, which are needed for an effective interaction with Src, leading to Src inhibition. The interaction between Cx43 and Src requires PTEN, an enzyme and inhibitor of Src. PTEN is both a protein and a lipid phosphatase, able to dephosphorylate lipids in the plasma membrane and amino acids on protein substrates. While studying the interactions between Cx43, Src, and PTEN, we observed direct interaction between Cx43 and PTEN in the absence of Src. We hypothesized that PTEN may not only dephosphorylate Src, but may also serve as a phosphatase that can dephosphorylate Cx43. Along with PTEN's phosphatase activity, we also hope to determine whether there is more specificity seen toward Serine/Threonine or Tyrosine amino acids on Cx43. Here, we present our ongoing work on Cx43 dephosphorylation by PTEN in both pure and more complex mixtures of protein components.

Title: **Connexin 43: A Molecular Scaffold for Src-Csk-PTEN Interaction**
Student: Sophia Shienvold
Advisor: Dr. Anastasia Thévenin
Location: Reeves Library

Gap junctions are intercellular structures, one of which is Connexin 43 (Cx43), a transmembrane protein. The c-terminus (CT) of Cx43 is about 150 amino acids long, and contains several sites that can be phosphorylated, a type of modification. The CT has a proline rich region, and a porto-oncogene, Src, tends to bind to the region. In cancer cells, Src tends to be upregulated, and Cx43 is usually absent. Researchers have discovered that Cx43 can be used as a tumor suppressor due to it’s ability to attract Src. The lab has focused on working with mutated Cx43 CT, either phosphomimetic or phosphodead, to determine the best mutant for attracting Src. The lab is also interested to see how much PTEN and Csk are attracted with Src, as both work to inhibit Src. Current work is being performed in vitro to confirm results from hybrid experiments.

Title: **Plotting 3D Current Distributions in the Inner Magnetosphere**
Student: John Riley
Advisor: Dr. Keith Wood
Location: Reeves Library

Convection in Earth's outer core creates a magnetic field in the space around Earth. The interactions between this geomagnetic field and the solar wind induce electrical currents in the Earth's magnetosphere and upper ionosphere. These currents can be measured by spacecraft in great detail, but only at the spacecraft's location. This project calculates current distributions with lower resolution but spanning the entire inner magnetosphere. Assuming quasi-neutral and quasi-static conditions, Ampere's Law is used to calculate current density from magnetic field components derived from the TS05 magnetosphere model. Code to carry out these calculations was written in Python, which was also used to plot the results. Beginning with currents at the Earth's northern ionosphere, this project has expanded to cover the inner magnetosphere out to eight Earth radii. By examining various two dimensional 'slices' through the magnetosphere it is possible to generate 3D plots of magnetospheric currents. Research is being conducted for several geomagnetic storms, as well as quiescent periods.

Title: **The Relationship Between Individuals' Exposure to Rhetoric in the Narratives of Interactive Media and the Surrounding Discourse**
Student: Joel Hendricks
Advisor: Dr. Crystal Fodrey
Location: Reeves Library

This project examines the ways in which the narratives of interactive media (video games) influence their audiences by looking at three games: Persona 5 Royal, The Last of Us, and Omori. This project applies rhetorical theory and qualitative research methods to better understand how narratives in specific games elicit responses in their players. By connecting personal experiences with the rhetorical analysis, I hope to answer how these narratives influence the lives of those who experience them.

Title: **Toggle on a Cycle with 2 Cords**
Students: Kristian Wolf, Stefano Garofalo, Jacob Hyatt, and Sydney Shifman
Advisors: Drs. Trisha Moller and Michael Fraboni
Location: Reeves Library

The game Toggle takes the rules from the game Lights Out to motivate gameplay. Last year, solutions were discovered for all cycle graphs and generalized solutions were made for some cycle graphs with a cord. The standard toggle move says that once you hit a switch, the switch and all of its neighbors flip to the parity of either on or off. We plan to use the standard toggle move to attempt to generate patterns for cycle graphs with 2 cords. Once we have a generalization for cycles with 2 cords, we would move into adding more cords until we get complete graphs.

Title: **Mutually-Exclusive Interaction of Connexin 43 with Src and ZO-1 in Healthy and Cancer Cells**
Student: Hailey Belverio
Advisor: Dr. Anastasia Thévenin
Location: Reeves Library

Connexin 43 (Cx43) is a transmembrane protein that forms gap junctions (GJs) - cellular channel structures necessary for direct cell-cell communication. Cx43 GJ function is regulated through phosphorylation (a type of chemical modification) on the serine amino acids along Cx43 C-terminus (CT). Functional, open GJ channels interact with a scaffolding protein, zona occludens 1 (ZO-1). However, interaction of Cx43 GJs with a non-receptor tyrosine kinase Src closes GJ channels, thus decreasing cell-cell communication. Our laboratory recently screened mutants of Cx43 and observed that serine 373 phosphorylation on Cx43 recruits Src, while ZO-1 is unable to interact with Cx43 when

this site is phosphorylated. We hypothesized that S373 phosphorylation serves as a regulatory switch that dictates whether Cx43 will interact with Src (when S373 is phosphorylated) or with ZO-1 (when that site is non-phosphorylated). Given the fact that Src is a known oncogene (cancer-causing protein) and Cx43 is an important tumor suppressor, it is important to decipher molecular mechanisms that regulate Cx43/Src and Cx43/ZO-1 interaction in both healthy and cancerous cells. This work provides evidence that Cx43 phosphorylation dictates Src and ZO-1 recruitment to Cx43CT from both healthy epithelial cells and from prostate cancer cells.

Title: **The Role of Dune Elevations in Morella cerifera Seedling Establishment**
Students: Giselle Ponce-Bautista and Cielo Disla
Advisor: Dr. Natasha Woods
Location: Reeves Library

Shrub encroachment into grasslands is occurring along the mid-Atlantic and Gulf coasts by the native, evergreen shrub, Morella Cerifera. Previous studies on Hog Island, Virginia, a long-term ecological field site, show dunes >2 m elevation protect M. cerifera during early stages of development; however, the conditions that make this a favorable location for seedling establishment are unclear. In this field study, multiple abiotic factors (i.e., soil moisture and temperature), were quantified in swales behind dunes of varying elevations (>2m, 1.5m, and 1m) to determine how they may contribute to successful seedling establishment. Soil moisture was low in this coastal environment, but significantly lower behind 1 m dunes (2.3% ± 1.1). There were no differences in soil moisture behind the >2m and 1.5 m dunes. Similar results were found with temperature: swales behind 1 m dunes experienced warmer minimum (20.7℃ ± 0.1) and maximum (37.3℃ ± 0.3) temperatures and there were no significant differences between swales behind 1.5 and >2 m dunes. The microenvironment behind 1 m dues is drier and warmer, likely limiting successful establishment of shrubs.

Title: **Amrhein Investment Club: The Growth Fund**
Students: Avery Napolitano, Bryan Krum, Louis Spann, Gavin Wagner, and Tori Santoriello
Advisor: Dr. Daniel O'Connor
Location: Reeves Library

The Amrhein Investment club was founded on the belief of granting students the opportunity to gain real world experience in inestment management, without risking their own capital. The club grants students the opportunity to learn more about the equity markets and how different strategies for the four different funds can commingle. The growth fund has experienced exponential growth over a five year period, with a primary focus in information technology.

Title: **Using Reading Circles to Promote Science Self-Identification in Six to Ten Year-Old Girls**
Students: Devon Goerlich and Elisabeth Mohney
Advisors: Drs. Sarah Johnson and Stacey Zaremba
Location: Reeves Library

We report throughout this ongoing longitudinal study how societal biases encourage young boys and girls to associate science with men, specifically focusing on the attitudes of girls. To investigate further, we conducted a six-session book circle program with six to ten year-olds featuring nonfiction children's books about women in science that included women of multiple demographics and ages. During this presentation, we will share data from our pre- and post-gender-science bias measures, including implicit priming, Draw-a-Scientist-Task (DAST), and behavioral tasks. We found some results from the explicit measures that indicate a positive shift in the children's attitudes. The post data from the DAST revealed a marginal increase in female scientists, and children that may have not known about the field of science before our experiment, did draw significantly more science-related symbols. Overall, our findings so far do show that children in general have some confidence related issues when it comes to the field of science and young girls especially do not think of themselves as being scientists even if they enjoy the respective subject of science. There is hope that throughout more studies, young girls will identify themselves more with the possibility of being a future scientist.

Title: **Temporal Trends in Primate Distribution: An Analysis of Line Transect Data from 2023 to 2024**
Student: Santoshi Mutyala
Advisor: Dr. Sara McClelland
Location: Reeves Library

Tropical rainforests make up only seven percent of the Earth's land mass, however they sustain over half the planet's living organisms. The deforestation of tropical rainforests poses a significant threat to biodiversity. A group of animals that are particularly threatened by deforestation are primates as they are incapable of surviving in non-forest environments. To gain a better understanding of how deforestation affects primate populations, primatologists conduct line transect surveys. The purpose of line transect surveys is to gauge the abundance and occurrence of primates in a certain area. The focus of this study is to determine the population density of the primate species at Camiquiri Conservation Initiative. Camiquiri Conservation Initiative (CCI) was founded in 2020 and is surrounded by farms and logging areas. Since it is a new conservation site, the population densities of most of the animals at CCI are unknown. We conducted line transect surveys to gain better insight on the population densities of the different primate species at CCI. With this information, we are able to understand the importance of CCI in conserving endangered primate populations.

Title: **Analyzing Dominance In Prey Predator Relationships**
Student: Megan O'Brien
Advisor: Dr. Joshua Lord
Location: Reeves Library

Our grass shrimp interactions with the predator, the blue crab, impacted by their dominant or submissive behavior? Will this behavior change an acidic pH water?

Student Poster Presentations III
Reeves Library
Wednesday, April 17, 2024
12:00 - 1:00 PM

Title: **Impact of Temperature Change on the Foraging Abilities of Mud Snails**
Student: Rachael Goodman
Advisor: Dr. Joshua Lord
Location: Reeves Library

The amount of greenhouse gases in the atmosphere are increasing due to excessive emissions and the oceans trap this excess heat, affecting marine life, including mud snails. These snails play an essential ecological role as scavengers along the Atlantic coast of North America, and they forage using chemosensory cues in the water. This research project attempted to recognize any changes in the foraging abilities of snails by tracking their path using ImageJ software. Two sinking pellets were used, and a single snail was placed in a tank and recorded until it touched the pellets or the time reached 20 minutes. Control tests were done using room temperature water and tests were done using water that was heated to 25-28 degrees Celsius. Using the time lapse photos, an image of their path was created and their speed, distance traveled, and other variables were measured. The goal was to compare the results and determine the effect that rising ocean temperatures will have on the foraging abilities of mud snails.

Title: **Regulatory Effects of MAPK Signaling Pathways on Cx43-Src Interactions**
Student: Lauren Latchford
Advisor: Dr. Anastasia Thévenin
Location: Reeves Library

Connexin 43 (Cx43) is a membrane protein constituent of gap junctions (GJs) - cellular structures required for cell-cell communication. The C-terminal tail (CT) of Cx43 resides in the cytoplasm and serves as a tumor suppressive signaling hub for a cancer-causing protein, Src. When Src is active, it is recruited to Cx43CT, leading to Src inhibition and decrease in Src-driven cancer progression. The Src binding region on Cx43CT harbors four serine (S) sites (S255, S262, S279, and S282) that are modified through phosphorylation (a type of chemical modification) by mitogen-activated protein kinase (MAPK) family. We recently discovered that mimicking/faking phosphorylation at these sites decreases Cx43/Src interaction. The MAPK family consists of three distinct members (ERK, JNK, and p38), and it is not known how each one affects Cx43/Src interaction. In this work, we systematically assess each MAPK's ability to phosphorylate serines on Cx43 using ERK, JNK and p38 from mammalian cells. We then test phosphorylated Cx43 proteins in their ability to interact with Src. Our results help delineate effects of each MAPK signaling pathway (ERK vs. JNK vs. p38) on Cx43 and Src interaction, informing our design of Cx43-based therapeutics to target Src in cancer.

Title: **Rooting for Resilience: Investigating Belowground Interactions in Shrub Encroachment**
Student: Helaena Holjes
Advisor: Dr. Natasha Woods
Location: Reeves Library

Shrub encroachment into grasslands is occurring in ecosystems worldwide which could lead to fragmentation of barrier islands and reduce protection for people and property on the mainland. Biotic interactions may influence the encroachment process through grass-shrub belowground interactions (i.e., mycorrhizal fungi facilitation) in nutrient poor environments. A hoop house experiment was set up to determine the extent to which belowground root interactions influence the growth of the seedlings of Morella cerifera (a native, evergreen shrub) by excluding root contact with grasses. Grasses have fibrous roots and may have more mycorrhizal root infections that could benefit M. cerifera. The extent to which root interactions aid in the growth of M. cerifera is currently unknown. Shrub growth metrics included height, biomass, and canopy area. After 12 weeks, the average height growth rate was 55% higher when roots interacted (interaction: 6.45 ± 0.51 cm, no interaction: 4.16 ± 0.44 cm, $p<0.01$). The average canopy area growth rate was 77% higher when interacting (interaction: 177.82 ± 17.81 cm, no interaction: 99.48 ± 15.84 cm, $p<0.01$). Belowground interactions had positive effects on shrub growth potentially impacting their encroachment into grasslands.

Title: **Probing DNA-Binding Sites of Novel Rhodium Complexes Through Mass Spectrometry**
Student: Kassandra Alicea
Advisor: Dr. Stephen Dunham
Location: Reeves Library

The purpose of this independent research is to investigate the potential binding of dirhodium tetraacetate complexes to a double stranded 34-mer deoxyribonucleic acid (DNA) sequence specifically designed to test binding of drugs to DNA. The significance of rhodium complexes lies in their potential anticancer properties, similar to the widely used drug, cisplatin. Cisplatin toxicity is believed to originate from its ability to crosslink and form DNA adducts, preventing repair of DNA leading to DNA damage and inducing programmed cell death (apoptosis) within cancer cells. Analysis of dirhodium binding to the 34-mer DNA can be achieved using mass spectrometry (MALDI-TOF), chromatography (HPLC), and Atomic Absorption spectroscopy (AA). Utilizing centrifuge filter tubes reduces sodium and potassium ion binding to the DNA duplex, aiding the identification of the 34-mer DNA duplex on the MALDI-TOF. Additionally, we aim to identify the specific nucleotide position within the 34-mer DNA to which dirhodium tetraacetate binds by employing exonuclease digestion followed by MALDI-TOF analysis. If the dirhodium complexes mimic cisplatin, we would predict preferential binding to form dirhodium-guanine adducts.

Title: **First Insights into the Diversity of the Real Cynortellana (Opiliones: Cosmetidae) from Cuba**
Student: Riley Masten
Advisor: Dr. Daniel Proud
Location: Reeves Library

This study aims to understand the morphological characters that delimit genera in the harvester family Cosmetidae (Arachnida: Opiliones: Laniatores) with a focus on species from Cuba. We identified clades of cosmetids in Cuba using a molecular phylogenetic framework and then searched within those clades for morphological traits that represent synapomorphies. Based on the molecular phylogeny, Cuban cosmetids were recovered as a single clade that was split into two sister clades which we identified as Cynortoides and Cynortellana. The genus Cynortellana exhibits an elaborate dorsal color pattern that is highly variable and, in males, the distal part of femur IV is slightly thickened. In contrast, Cynortoides exhibits a simple dorsal pattern (Y-shape with a posterior line) that is highly conserved, and, in males, femur IV is heavily armed with rows of tubercles and spines. Systematic revisions are proposed for both genera, but we focus our attention on the diversity of Cynortellana including a new undescribed species from Cuba. This study provides a better understanding of the traits that can be used to delimit cosmetid genera by investigating monophyletic groups endemic to islands. Future work should test whether these traits delimit mega-diverse genera found in the continental Americas.

Title: **The Detection of Docosahexaenoic and Linoleic Acid in Equine Feed Samples**
Student: Alexandra McDevitt
Advisor: Dr. Alison Holliday
Location: Reeves Library

The fatty acids docosahexaenoic (DHA) and linoleic (LA) play crucial roles in equine metabolism health. Recent studies have identified that DHA and LA improve weight gain and coat quality and control inflammation among horses of various ages and activity levels. Through analysis of various equine feeds and supplements, we can begin to detect the presence of these fatty acids and their ratio to other fatty acids. This analysis focused on separating fatty acids from an assortment of feed brands by continuous extraction with hot solvent in a Soxhlet extraction apparatus. To identify target analytes, the fatty acids were then methylated to be analyzed using gas chromatography-mass spectrometry (GC-MS). Preliminary results of this analysis found detectable levels of DHA, LA, and other fatty acids. Using this data, it is possible to continue analysis and quantify amounts of DHA and LA to then examine how various feed samples further impact equine metabolic health.

Title: **Optimizing Hydrophobic Properties in Cytotoxic Dirhodium Compounds**
Student: Tegan Haley
Advisor: Dr. Stephen Dunham
Location: Reeves Library

Since the discovery of cisplatin in 1972, organometallic compounds have been researched for their anti-cancer properties. We are interested in preparing new dirhodium metal compounds and testing their toxicity in cancer cells. A new dirhodium complex with three acetate and one octanoate ligands was prepared. The $Rh_2(acetate)_3(octanoate)$ compound was synthesized from dirhodium tetraacetate and sodium octanoate to increase the hydrophobic properties of the compound and determine its cytotoxic effects. It was characterized using proton and carbon nuclear magnetic resonance (NMR) spectroscopy, high performance liquid chromatography (HPLC), and liquid chromatography-mass spectrometry (LC-MS). By developing a successful synthesis procedure, enough $Rh_2(acetate)_3(octanoate)$ has been isolated so that it can now be tested in both cervical cancer (HeLa) and breast cancer (MDA-MB-231) cells.

Title: **Developing Cross-Cultural Competence for Family-Centered Care: A Collaborative Authoethnography**
Student: Mary Jane Granito
Advisor: Dr. Monica Kaniamattam
Location: Reeves Library

Exposure to clinical research projects in countries outside the US provides students with a unique opportunity to gain exposure to global perspectives on communication disorders and understand the constraints of attitudinal, policy, and resource barriers to timely rehabilitation provision. It also helps students develop cultural sensitivity about the local culture and contributes to cultural humility.

Three SLP students, including me, a second-year undergraduate; a 1st-year master's student, and a 2nd-year master's student, conducted a collaborative autoethnography of our development of cross-cultural sensitivity while coding video-recorded early intervention sessions in India. This student project aimed to better understand global perspectives and practices for involving families in early intervention.

We analyzed data from a video-reflexive ethnography of family-centered early intervention practices in India. The project aimed to examine Indian parents' sociocultural understanding of their role in early intervention and investigate how participation in a family-centered early communication intervention with parent coaching affects the quality and quantity of parent-child interactions.

Analysis and coding of students' independent reflections and group discussions reveal that immersing themselves in the intervention data, including SLP and parent interviews, was an excellent learning opportunity in one's journey toward cultural competence and cultural humility.

Title: **3DADAPT: Organizing 3D Printable Assistive Tech Devices**
Students: Zachery Bingaman and Owen Halliday
Advisors: Drs. Jeffrey Bush and Sara Benham
Location: Reeves Library

The use of 3D Printing for the creation of accessibility devices has grown significantly in recent years. However, the 3D models are scattered across multiple different sites and are typically difficult to find. We are working on a solution: 3DAdapt. 3DAdapt has a curated list of 3D models from all across the internet. This allows for easier access for everyone to access these accessibility devices. Even without a 3D Printer, the order functionality, which uses Craftcloud's API, allows anyone to obtain a device specific for their needs. We allow for the direct upload of models or importing from many popular 3D Printing sites, such as Thingiverse or Pinshape. The 3DAdapt service is built using many technologies: MongoDB for the database, AWS S3 for model and image storage, Flask for the web server, Celery for distributed task management, and a Python backend to run background processing such as collecting data from different sources. At this point, the app is usable and publicly available. In the future we hope to expand to support for importing from more services and add features to make it even more usable.

Title: **Determining the Mechanism of Seleno-L-Methionine Protection of Burkholderia-Infected Macrophages**
Student: Jacob Freeh
Advisor: Dr. Kara Mosovsky
Location: Reeves Library

Burkholderia pseudomallei is a soil- and water-dwelling gram-negative bacteria that causes melioidosis, an infectious disease endemic to southeastern Asia and northern Australia. *B. pseudomallei* is capable of evading phagocytic and non-phagocytic cell defense systems, entering the cell to proliferate and cause harm. Even with antibiotic treatments, melioidosis is a life-threatening disease that has become mostly antibiotic resistant, therefore there is urgent need to find potential therapies. Our lab has found that the dietary antioxidant, Seleno-L-Methionine (SeMet) protects cells from death during an infection, while also reducing intra- and extracellular bacterial burden. We then continued

exploring the protective mechanism of SeMet. Using enzyme linked immunosorbent assays we quantified levels of pro-inflammatory cytokines to see if SeMet decreased inflammation. We also explored whether SeMet was functioning as a direct or indirect antioxidant to reduce reactive oxygen species. We discovered that SeMet was decreasing inflammation and is likely directly scavenging reactive oxygen species in an infection, which provides further evidence towards the protective effect of SeMet.

Title: **Community Strategies for Improving Health in Allentown: The Lens of Diabetes Health Disparities**
Student: Michael Irving
Advisor: Dr. Colleen Payton
Location: Reeves Library

This qualitative study investigates diabetes care outlooks in Lehigh County, Pennsylvania, with a focus on downtown Allentown, Bethlehem, and North Whitehall. With approximately 11.1% of adults affected and $9.0 billion in annual medical costs, diabetes presents a significant health and economic burden in the region. Through a comprehensive approach encompassing literature review, data analysis, and stakeholder interviews, the study aims to identify gaps in diabetes care and propose strategies for improvement.

Preliminary findings reveal notable disparities in diabetes care and a spectrum of issues impacting health equity in Lehigh County. Variances in responses among stakeholders underscore the multifaceted nature of diabetes prevention, diagnosis, and management within the community. Further advocacy for targeted population-based public health interventions, particularly in Allentown, to address identified gaps effectively is recommended.

By highlighting the urgent need for intervention and offering actionable insights, this research contributes to the ongoing discourse on improving diabetes care and promoting health equity in Lehigh County. The findings underscore the importance of collaborative efforts among stakeholders to implement sustainable solutions and mitigate the impact of diabetes on the community's health and well-being.

Title: **Observing Dirhodium complexes of Poly-L-Glutamic Acid by Mass Spectrometry**
Student: Savannah Labukas
Advisor: Dr. Stephen Dunham
Location: Reeves Library

Poly-L-Glutamic Acid (PLG) has the capability to form complexes with molecules to provide a new method of delivering drugs. Dirhodium complexes have shown to be cytotoxic and can bind to PLG through the carboxylic acid sidechain of each glutamic acid in the polymer. PLG (n=20) is being studied to determine the reaction conditions needed to bind dirhodium to PLG and characterize the bound dirhodium-PLG complexes. Crude PLG samples were purified by high-performance liquid chromatography (HPLC) using either reverse phase (RP), or ion exchange (IE) methods. Matrix-assisted laser desorption ionization (MALDI) mass spectrometry was used to characterize the size of the purified PLGs. Nano Drop ultraviolet spectroscopy was used to determine PLG concentrations in preparation for reactions with dirhodium compounds. The RP-HPLC was used to separate the polymer by polarity and confirmation of PLG size was done using the ion exchange and MALDI. These experiments confirmed the RP-HPLC PLG samples to have an average molecular weight consistent with a range of lengths from X-Y. but there were no other contaminants as seen by MALDI. Reactions with dirhodium compounds were followed through, and observation of the reaction using varying ratios of moles of rhodium: PLG-20 was monitored over several days using the IE-HPLC. MALDI was then used to see if there was a change in molecular weights from before the reaction to determine if dirhodium had bound to the glutamic acid side chains in PLG.

Title: **Distraction as Expressed Through Color**
Student: Dakota Bateman
Advisor: Dr. Sarah Johnson
Location: Reeves Library

Throughout everyday life we are bombarded with distractions displayed both visually and auditorily. Visual distractions pull our attention away from what we are attempting to focus on. Color distractions are consciously used when it is dark to draw attention to people walking or jogging in the road, but color is also distracting us subconsciously at the same time. Color can distract when there is too large of a variety of it or if it is all the same. During this experiment, participants were presented with a target color prior to a lesson about color theory and were asked to recall and identify information from the lesson and the target color. We expect that the colors which are closely related to the targets will interfere with recall while those which are not closely related will have less of an effect on the ability to correctly recall the given target. If results are significant, they may be relevant for decorating and teaching students within a classroom.

Student Poster Presentations IV
Reeves Library
Wednesday, April 17, 2024
4:00 - 5:00 PM

Title: **Quantifying delta-8-tetrahydrocannabinol in commercial hemp products**
Student: Christina Awwad
Advisor: Dr. Alison Holliday
Location: Reeves Library

In the past year, there has been an explosion in the number of commercial products containing delta-8-tetrahydrocannabinol (delta-8-THC). This isomer of the active ingredient in marijuana, delta-9-THC, is thought to have some psychoactive properties. However, it is currently unregulated and thus can be sold in states where marijuana use remains illegal or subject to high levels of regulation. Earlier we found that there is a high level of heterogeneity for delta-8 THC within a hemp sample, likely reflecting the method used to apply the delta-8 THC. The goal of the research this semester was getting a better resolution for delta-8 from delta-9 and other cannabinoids commonly found in hemp samples using a 2.6 µm C18 column. By analyzing delta-8 THC and CBDA, we are more confident about our data that shows the heterogeneity of delta-8 THC within the sample.

Title: **Impact of Habitat on Mobbing Behavior in Shrimp**
Student: Yami Gottbrecht
Advisor: Dr. Joshua Lord
Location: Reeves Library

Little is known about habitat use and aggressive behavior in shrimp, though this could have potentially large impacts on shrimp populations and predator-prey relationships. This project focused on the grass shrimp *Palaemon pugio*, which is common in estuaries along the east coast of North America and has recently been documented to mob to attack their predators. In this study, we put grass shrimp into an enclosure with a mummichog fish (their predator), with multiple types of shelter available. One of these shelters was preferred by the shrimp, while the other was preferred by the fish, and we wanted to assess the interaction between shelter use and shrimp aggression. The shrimp exhibited aggressive mobbing behavior towards their fish predator, though this seemed to diminish over time, especially in the shelter that was preferred by the fish. Early observations suggest that grass shrimp may be more aggressive towards their predator when they first encounter them as well as in habitats that are of higher value to the shrimp. These results could have broad implications for the way that shrimp and fish populations allocate habitat use and could help us learn more about newly described mobbing behavior in shrimp.

Title: **Genomics and biochemical analyses of a cosmetid harvester (Arachnida: Opiliones)**
Student: Hayley Carroll
Advisor: Dr. Daniel Proud
Location: Reeves Library

The initial goal of this project was to investigate the sexually dimorphic gland on leg I of cosmetid harvesters. Previous studies revealed an interesting morphology of the leg glands. However, the chemical composition of the secretions, genes involved in expression of these glands, and function of the glands are not well understood. We used GC-MS and MALDI to analyze the secretory products of the glands in several species of cosmetid harvesters. The chemical analysis yielded no conclusive results, likely due to limited numbers of fresh specimens from which to extract samples.

In addition to studying the glands, we sequenced and assembled the complete mitochondrial genome of *Libitioides sayi.* We compared the mitochondrial genome of *L. sayi* to other arachnid species with published mitochondrial genomes (including three harvesters). We discovered that *L. sayi* exhibits major rearrangements to the order of protein-coding genes and encodes only two of the 22 tRNAs that are typically found in the mitochondrial genome of other arachnids. *L. sayi* is a particularly interesting species of harvester, and our findings open the door to many future directions.

Title: **Effect of Predators on Grass Shrimp Dominance Hierarchies**
Student: Nick DiVittorio
Advisor: Dr. Joshua Lord
Location: Reeves Library

Even though their abundance and ecological importance in the marshes of the Atlantic Coast is well established, grass shrimp (*Palaemon pugio*) are understudied, with little known about their behavior. Recent research into their behavior has discovered that these shrimp form dominance hierarchies that are established through repeated fights, but we know little about the ecological implications of this behavior. The goal of this experiment was to study whether intraspecific aggression and hierarchy formation changed in the presence of blue crab (*Callinectes sapidus*). To study this, trials of ten tagged shrimp were observed in a three-part tank design where shrimp could stay in a predator-exclusion area or move into predator zones with or without shelter. Aggressive, dominance-forming interactions were observed and recorded, with fights compared between different zones of the tank as well as between trials with and without predators. Early results suggest that shelter availability and predator presence could influence the hierarchy-forming behavior of grass shrimp, indicating that their social hierarchies may vary in importance or prevalence depending on environmental conditions.

Title: **Synthesis and Characterization of Mixed Carboxylate Ligand Rhodium Complexes**
Student: Emmanuel Bulted
Advisor: Dr. Stephen Dunham
Location: Reeves Library

Two rhodium compounds with similar structures have been investigated for their toxicity to cancer cells. These studies indicate they may not follow the same mechanism of toxicity. Those two compounds contain a metal-metal bonded dirhodium core that is surrounded by four carboxylate ligands to form either dirhodium tetraacetate ($Rh_2(OAc)_4$) or dirhodium tetrabutyrate ($Rh_2(OBu)_4$). We proposed to synthesize new dirhodium compounds that would have a mixture of acetate and butyrate ligands to provide materials to investigate the apparent differences in toxicity mechanisms. This SOAR 2023 research project focused on synthesizing four new compounds: $Rh_2(OAc)_3(OBu)$, cis-$Rh_2(OAc)_2(OBu)_2$, trans-$Rh_2(OAc)_2(OBu)_2$, and $Rh_2(OAc)(OBu)_3$. Each compound was synthesized, purified by high-performance liquid chromatography, and characterized by mass spectroscopy proton and carbon nuclear magnetic resonance spectroscopy. These four compounds can now be used in cancer cell studies to determine their toxicities and if their mechanisms are more similar to $Rh_2(OBu)_4$ or $Rh_2(OAc)_4$.

Title: **Investigating the Diversity of Cosmetid Harvesters (Opiliones) in Central America**
Student: Caleb Gunkle
Advisor: Dr. Daniel Proud
Location: Reeves Library

The family Cosmetidae (Opiliones: Laniatores) is a diverse group of Neotropical harvesters with 717 species in 80 genera. Over the past 150 years, a flawed typological approach has led to a classification system in which cosmetid genera do not form monophyletic groups. For the cosmetids of Costa Rica and Panama, we compiled data from historical species descriptions and examined type materials from the Museum of Comparative Zoology. Type materials were photographed using a digital camera mounted on a stereomicroscope, and image data will be made publicly available through an online database. Type localities were georeferenced with observations in iNaturalist to improve species identifications. We compiled the iNaturalist observations of undescribed species and aim to collect these during future field work. We also re-examined a previously generated molecular phylogeny for Costa Rican cosmetids. Systematic revisions to cosmetid genera are proposed based on the data we compiled from the molecular phylogeny, type materials, original species descriptions and illustrations, and iNaturalist observations. This work has generated new insights and questions regarding evolutionary relationships, processes of speciation and diversification, and biogeographic patterns for cosmetids of Costa Rica.

Title: **Exploring the Role of Zinc in a Transgenic Drosophila Model of Alzheimer's Disease**
Student: Kaylee Yeager
Advisors: Drs. Christopher Jones and William Farina
Location: Reeves Library

Alzheimer's Disease is a neurodegenerative disease affecting more than 6 million Americans. Its molecular mechanisms are characterized by the altered cleavage of the Amyloid Precursor Protein, forming amyloid-β (Aβ) plaques that aggregate in the extracellular space between neurons. Many variations of the Aβ peptide exist, with the most common being Aβ40 and Aβ42. Aβp3-42 is less common but tends to become more concentrated in the brain as the disease progresses. Many ions are known to increase the aggregation rate of Aβ, including zinc. This study sought to understand the effects of zinc on various Aβ peptides in transgenic Drosophila melanogaster models. Phenotypic characterization was done in two ways—with an eye expression driver (GMR Gal4) and a pan-neuronal driver (nSyb Gal4). Aβ flies were bred to Gal4 flies and raised in food that contained varying concentrations of $ZnCl_2$. In the GMR flies, Aβp3-42 appeared to have the highest expression of a rough eye phenotype. Brain dissections were performed to visualize the nSyb phenotype. No solid conclusions were drawn from the brain observations. In the second part of this study, a zinc chelator, called ZX1, was synthesized and supplemented to observe its ability to alleviate aggregation of each Aβ peptide.

Title: **Predator Size and Mobbing in Grass Shrimp**
Student: Hailey Hoffman
Advisor: Dr. Joshua Lord
Location: Reeves Library

Grass Shrimp are abundant and ecologically important organisms in marshes along the Atlantic Coast. Although they are important, little research has been done regarding their behavior. Previous studies found that these shrimp will purposefully leave their shelter to harass a predator. This behavior, called mobbing, has never been described in marine invertebrates. This study investigated the relationship between mobbing behavior and predator size. Various sizes of blue crabs were used in this study, including small (4.0cm), medium (5.1cm), and large (6.6cm) crabs. Five trials were conducted with small crabs, 10 with medium crabs, and 5 with a large crab. For each trial, one crab was placed in a tank with 10 shrimp and recorded for 20 minutes. The shrimps' predator-approaching behavior was analyzed, recorded, and compared to trials with different sized crabs. Two different styles of contact were recorded as buzz, a quick swim towards the predator, or saltatory, a start and stop approach. The type of contact was also recorded as either touch or approach only. Findings from this study suggest that style is not impacted by the size of the predator, but the total "contact" decreases as predator size increases.

Title: **Weathering the Storm: Investigating the Impact of Salinity and Burial on *M. cerifera* Seedling Root Growth**
Student: Jacob Donmoyer
Advisor: Dr. Natasha Woods
Location: Reeves Library

Barrier islands are essential for protecting coastal communities and providing essential ecosystem services. Biofeedbacks between vegetation and soil add to the stability of barrier islands. Warmer winter temperatures have contributed to the encroachment of shrubs into grasslands; however, the expansion of shrubs may also be impacted by storms (i.e., salinity and burial). Storms are predicted to increase in intensity and frequency. The impact of changes in weather patterns on the encroachment of *Morella cerifera*, a native encroaching shrub on Virginia Barrier islands, is currently unknown. *Morella cerifera* is moderately salt tolerant but may be vulnerable to salinity at early stages of development. Although dune grasses are stimulated to grow after burial, it is unknown if shrubs will continue to grow when buried. More investigation of salinity and burial on root development of *M. cerifera* seedlings is needed to determine if an increase in storm frequency will impede shrub encroachment. This experiment aimed to determine the impact of salinity and burial on seedling roots of *M. cerifera*. Seedlings were exposed to the following treatments: salinity only, burial only, and salinity and burial to determine the independent and collective impact of storms on root development.

Title: **A Titanocene(III) Borohydride Catalyzed Reduction of Nitriles to Amines**
Student: Jorge Velazquez
Advisor: Dr. Godfred Fianu
Location: Reeves Library

Amines are used in numerous industries to create products like dyes, drugs, plastics, surfactants, and even anti-corrosion agents. Amines are also vital in the pharmaceutical industry for the synthesis of central nervous system drugs. In this research, various amines were synthesized by reducing various nitriles via hydrosilylation using a titanocene(III) borohydride-PMHS reagent system. The reactions were run in a glovebox under an argon atmosphere, and the titanocene borohydride catalyst was formed by dissolving a readily available and inexpensive titanocene dichloride and sodium borohydride in DME. A cheap, easy-to-handle, and environmentally friendly reducing agent, polymethylhydrosiloxane (PMHS), was used as the hydride source. The reactions were worked up using NaOH, and the products were analyzed using GC-MS, FTIR, and NMR.

Title: **Connexin 43: A Scaffold for Efficient Inhibition of Src Activity By Csk**
Student: Abigail Angelisanti
Advisor: Dr. Anastasia Thévenin
Location: Reeves Library

Connexin 43 (Cx43) is a membrane protein that makes up gap junctions (GJs) - cellular structures involved in cell communication. Recent studies have identified that the cytoplasmic Cx43 C-terminal tail (CT) serves as a scaffold needed for regulation of Src activity. Src is a non-receptor tyrosine kinase that is often overexpressed in cancer. When Cx43 is present, its CT recruits Src along with two Src inhibitors - a kinase enzyme called Csk and a phosphatase - PTEN. Csk (C-terminal Src Kinase) regulates Src by chemically modifying it through phosphorylation. Because Csk typically requires a protein scaffold to inhibit Src, we hypothesized Src inhibition by Csk will be more effective in the presence of Cx43CT. To test this, we expressed and purified milligram amounts of our protein partners from E.coli bacteria: Csk, Src, and Cx43CT. Our ongoing experiments are focused on studying Src phosphorylation by Csk in vitro in the presence vs. absence of Cx43CT protein. We are utilizing western blotting analyses with phospho-specific Src antibodies to assess Csk's ability to modify and inhibit Src. This initial in vitro work will help us shed light on the molecular mechanism of Cx43CT scaffolding for efficient Src inhibition by Csk in healthy and cancer cells.

The 2024 Senior Thesis Exhibition in the Payne Gallery opens on April 18th (6:00 PM). Students (seniors) will be exhibiting their year-long research and creative projects.

Student Presenters:

Ruth Alcantara
Theo Berenato
Larisa Bohensky
Alison DeLuca
Briana Fehnel
Liam Fitting
Helaena Holjes
Morgan Kipikasa
Alexander Jacobson
Brianna Lefkoski
Avery Saladino
Simone Toppin
Gianna Tully
Makenna Valentine
Abigail Weiner
Bailee Weller
Jared Whitehorn
Kaylie Wilson
Sophia Yanuzzelli

Graduate Student Conference Presentations (2023-24):

REHABILITATION SCIENCES

Wei, G. & Keegan, L.C. *Communication Partner Training for TBI in China*. PSHA Conference, April 2024, Pittsburgh, PA.
Faculty advisor: Dr. Louise Keegan

Simonson, C., Kelly, L., Marchetti, J., Aloia, A. and Keegan, L.C. *Social Peer and Group Interventions for Traumatic Brain Injury: A Critically Appraised Topic.* ASHA Convention, November 2023, Boston, MA.
Faculty advisor: Dr. Louise Keegan

Shaffer, R., Sanders, E., and Keegan, L.C. *Exploring the Relationship Between Speech-Language Pathologists and Music Therapists: A Qualitative Investigation*. ASHA Convention, November 2023, Boston, MA.
Faculty advisors: Drs. Eric Sanders and Louise Keegan

Strouse, AM, Choudhary, A. and Wilkenfeld, DA. *Evaluation of heart rate variability in adult elite athletes exposed to environmental heat: A critically appraised topic*. Eastern Athletic Trainers Association Convention, January 2024, Mashantucket, CT.

DAT student **Marc Wysocki** was awarded the **Frank George Doctoral Scholarship** at this EATA conference.

Strouse, AM and Choudhary, A. *Evaluation of Heart Rate Variability in Adult Elite Athletes Exposed to Environmental Heat.* Pennsylvania Athletic Trainers Society Annual Meeting, June 2023, Gettysburg, PA. Alissa Strouse and Ankur Choudhary were awarded "best poster" by a panel of 3 judges.

Alissa Strouse was also the recipient of the **Richard M. Burkholder Student Scholarship** – awarded to a student who has a desire and eagerness to gain knowledge not only in the classroom, but also through observation skills - and has insight of how these skills and knowledge can be used to evaluate early health problems and apply them to treat the patient and use them in practicing his or her chosen health profession.

Undergraduate Student Conference Presentations (2023-24):

AMRHEIN INVESTMENT CLUB

Avery Napolitano, Bryan Krum, Victoria Santoriello, Shane Klinger, Nabil Rezqui, Louis Spann, Fernand El Helou, and Gavin Wagner represented Moravian University at the QuinnipiacGAME Forum. The club won first place in the Core Portfolio Classification. March 2024.

BIOLOGICAL SCIENCES

Helanea Holjes. *Hidden connections: Investigating shrub expansion into grasslands.* National Council for Undergraduate Research, April 2024, Long Beach, CA.
Faculty advisor: Dr. Natasha Woods

Julia Lapinska. *Impact of salinity and burial on Morella cerifera seedlings.* National Council for Undergraduate Research, April 2024, Long Beach, CA.
Faculty advisor: Dr. Natasha Woods

Helanea Holjes. *Investigating the influence of grass-root interactions on shrub encroachment in a coastal grassland*. Association of Southeastern Biologists, March 2024, Chattanooga, TN.
Faculty advisor: Dr. Natasha Woods

Julia Lapinska. *Unraveling the impact of salinity and burial on Morella cerifera growth in a changing barrier island landscape.* Association of Southeastern Biologists, March 2024, Chattanooga, TN.
Faculty advisor: Dr. Natasha Woods

Giselle Ponce-Bautista and **Cielo Disla**. *Abiotic Factors influencing Morella cerifera seedling establishment in barrier island grassland swales.* Association of Southeastern Biologists, April 2024, Chattanooga, TN.
Faculty advisor: Dr. Natasha Woods

Lauren Latchford. *Differential Substrate Specificity of MAP Kinases Toward Connexin 43*. Protein Phosphorylation Conference, June 2023, Steamboat Springs, CO.
Faculty advisor: Anastasia Thévenin

Lauren Latchford. *Differential Substrate Specificity and Order Preferences of MAP Kinases Toward Connexin 43.* Frontiers in Chemistry and Biology Interface Symposium, May 2023, Baltimore, MD.
Faculty advisor: Anastasia Thévenin

Sophia Shienvold. *Levels of Cytotoxic Rhodium and Platinum Compounds in Select Organelles within HeLa Cells.* Frontiers in Chemistry and Biology Interface Symposium, May 2023, Baltimore, MD.
Faculty advisors: Shari Dunham and Anastasia Thévenin

G. Kester, **E. Guido**, **C. Reid**, **S. Shienvold**, S. U. Dunham Ph.D., A. Thévenin Ph.D., & S. Dunham Ph.D. *Biomolecule-Binding, Cytotoxicity, and Cellular Targets of Novel Dirhodium Complexes.* National Conference on Undergraduate Research, April 2024, Long Beach.

G. Kester, **E. Guido**, **C. Reid**, **S. Shienvold**, S. U. Dunham Ph.D., A. Thévenin Ph.D., & S. Dunham Ph.D. *Biomolecule-Binding, Cytotoxicity, and Cellular Targets of Novel Dirhodium Complexes.* Undergraduate Research at the Capital - Pennsylvania, March 2024, Harrisburg, PA.

Gwen Kester. *Cytotoxicity Assays of Various Dirhodium Complexes in Cervical and Breast Cancer Cells*. Landmark Summer Research Symposium, July 2023, Susquehanna University.
Faculty advisors: Anastasia Thévenin and Shari Dunham

CHEMISTRY

G. Kester and S.U. Dunham. *DNA- and Protein-Binding Kinetics of Novel Dirhodium Complexes.* Frontiers at the Chemistry/Biology Interface Symposium, May 2023, University of Maryland - Baltimore.
Faculty advisors: Anastasia Thévenin and Shari Dunham

EDUCATION

Rosina Symia. *Parents' Perceptions of Early Intervention for YoungChildren with Hearing Loss*. Division of Early Childhood Conference (DEC), November/December 2023, Minneapolis, MN.
Co-authors: Jean L. DesJardin (Moravian) and Brook Sawyer and Gabby Schneider (Lehigh University)
Faculty advisor: Jean DesJardin

MATHEMATICS – Moravian University Student Mathematics Conference, February 2024

Geoffrey Kleinberg. *Evaluating the EM algorithm in recombination model for constructing phylogenetic trees* (Oral presentation).

JP Appel. *Exploring Toggle Games on Graphs* (poster).

Aidan Malloy. *Directed Pebbling Games on Simple Graphs* (poster).

PHYSICS

J. Riley and K. Wood. *Plotting 3D Current Distributions in the Inner Magnetosphere.* Undergraduate Research at the Capital - Pennsylvania, March 2024, Harrisburg, PA.

PSYCHOLOGY

Daniel Babbert. *Elite Coaching Best Practices: Creating a Serial Winning Soccer Program.*
Presentation at the Eastern Psychological Association Conference, March 2024.
Faculty advisor: Dr. Robert T. Brill

Students Presenting at the National Conference on Undergraduate Research (NCUR), April 2024, Long Beach, CA:

Kalasia Bradshaw
Courtney Gordon
Hailey Hoffman
Helaena Holjes
Dwight Holloway
Gwen Kester
Julia Lapinska
Ayleen Mexquititla
Ebony Saccento
Isabelly Silva
Lucas Wolk

2024 Student Keystone Media Awards as recognized by the Pennsylvania NewsMedia Association – for the accomplishments of The Comenian:

AJ Minnich, editor-in-chief, with a first place award in the "Review" category, for his review of the "Cyberpunk 2077: Phantom Liberty" game.

The Comenian staff, a second place award in the "Ongoing News Coverage" category, for its series of stories on the HUB renovation's impact on Moravian Theatre.

Gail Schopple, reporter '23, a second-place award in the "Personality Profile" category, for her profile of Mary Griffin, founder of The Caring Place, a youth development center in Allentown.

Honors 2023-2024

Spring 2023-Fall 2023 (Projects completed)

Student	Discipline Area for Honors	Faculty Advisor(s)
Liam Fitting	Studio Art	Angela Fraleigh
Riley Scholl	Sociology	Rebecca Malinkski
Lucas Wolk	History and Education	Jamie Paxton and Triston Gleason

Fall 2023-Spring 2024 (Projects will be completed by the end of Spring 2024)

Student	Discipline area for Honors	Faculty Advisor(s)
Madison Amorim	Nursing	Janice Farber
Lillian Blomgren	Nursing	Paulette Dorney
Kalasia Bradshaw	Biology	Sara McClelland
Hayley Corroll	Biology and Chemistry	Daniel Proud
Christian Colciaghi	Nursing	John Mikovits
Megan Curtis	Economics and Peace and Justice Studies	Sonia Aziz Kelly Denton-Borhaug
Melissa Do	Accounting	Mark Koscinski
Victoria Donovan	Biochemistry	Anastasia Thévenin
Jacob Freeh	Biology	Kara Mosovsky
Courtney Gordon	Nursing and Africana Studies	Belinda Waller-Peterson
Joel Hendricks	Communications and Rhetoric	Crystal Fodrey
Helaena Holjes	Environmental Science	Natasha Woods
Gwen Kester	Biochemistry	Shari Dunham Anastasia Thévenin
Lauren Latchford	Biochemistry	Anastasia Thévenin
Pia Mazzella-DiBosco	Nursing	Karen Groller
Megan O'Brien	Biology	Joshua Lord
Rebecca Revitt	Nursing	Maryfrances Watchous
Sophia Shienvold	Biochemistry	Anastasia Thévenin
Gianna Tully	Art History and English	Angela Fraleigh Elizabeth Gray
Alexa Van Doren	Health Science	Rebecca Bawayan
Jordan Vargo	Sociology	Debra Wetcher-Hendricks
Brendon Ward	History	Richard Anderson

Students who completed Honors in Spring 2023 are listed here.

SOAR Projects 2023-2024

In the Name of the Republic. Articulating Race in Revolution Era Haiti, 1790-1794
Nathan Pynchon
Faculty Advisor: Heikki Lempa

Network Reliability Parameters and Exploration of Toggle on Graphs
Jean-Pierre Appel
Faculty Advisor: Nathan Shank

Synthesis and Characterization of Mixed Carboxylate Ligand Rhodium Complexes
Emmanuel Bulted
Faculty Advisor: Stephen Dunham

Shades of Living Light: Historic Collections through an Intersectional Feminist Lens
Liam Fitting
Faculty Advisor: Fraleigh, Angela

Using Reading Circles to Promote Science Self-Identification in 3rd- to 5th-Grade Girls
Devon Goerlich and Elisabeth Mohney
Faculty Advisors: Stacey Zaremba and Sarah Johnson

Soaring Above Nightingale: An Analysis for the Importance of Providing Culturally Competent Care in the Nursing Profession
Courtney Gordon
Faculty Advisor: Belinda Waller-Peterson

Analyzing Primate Diversity, Abundance, and Behavior at Camaquiri Conservation Initiative in Costa Rica
Holloway, Dwight
Faculty Advisor: Sara McClelland

Cytotoxicity Assays of Various Dirhodium Complexes in Cervical and Breast Cancer Cells
Gwen Kester
Faculty Advisors: Shari Dunham and Anastasia Thévenin

An Investigation of the Differences between Running Biomechanics while Running Overground vs Running on a Treadmill
Owen Nahf
Faculty Advisor: Michael Steimling

Determining Three-Dimensional Current Distributions in the Earth's Inner Magnetosphere Using the TS05 Magnetic Field Model and Satellite Measurements
John Riley
Faculty Advisor: Keith Wood

Parents' Self Efficacy and Involvement in Early Intervention for Families of Young Children with Hearing Loss: A Mixed Study Design
Rosina Symia
Faculty Advisor: Jean DesJardin

Unveiling the Masks of the Women Artists of Second Wave Feminism
Tully, Gianna
Faculty Advisor: Elizabeth Gray