14TH ANNUAL ACADEMIC EXCELLENCE SERIES

honors program
SENIOR PRESENTATIONS

APRIL 10, 2019

5:30 P.M.
SUITES ON MAIN NORTH THEATER
AND STILL HALL

CLARION UNIVERSITY

OPENING CEREMONY *program*

Wednesday, April 10, 2019
Suites on Main North Theater
5:30 p.m.

Welcome and Introductions ..... Katie Gannon
Honors Program Student Director

Guest Speaker Introduction ..... Dr. Rod Raehsler
Honors Program Director

Remarks ..... Dr. Dale-Elizabeth Pehrsson
Clarion University President

Presentation of Seniors and Faculty Advisors ..... Dr. Rod Raehsler
Honors Program Director

Presentation of Honors Stoles ..... Prof. Joseph Croskey
Honors Program Assistant Director

Closing ..... Olivia Wissinger
Student Honors Association President

SENIOR PRESENTATIONS
SPRING 2019

6:15 P.M.–7:45 P.M.

Session 1: 107 Still Hall

Faculty Moderator	Dr. Paul Woodburne
Alumni Moderator	Kelly Dungan
Rehearsal Moderator	Dr. Rod Raehsler

THE USE OF SOCIAL MEDIA CAMPAIGNS IN CORPORATE CHARITABLE DONATIONS
Jessica Denzer

AN ANALYTICAL STUDY OF POST-COMMUNIST STATES AND THE STATUS OF THEIR ECONOMIC TRANSITION 25+ YEARS OUT
Krista Mosi

ARE PERFORMANCE APPRAISALS NECESSARY FOR FIRMS? THE INFLUENCE OF PERFORMANCE APPRAISAL REGULARITY ON ORGANIZATIONAL CITIZENSHIP BEHAVIOR, RELATIONSHIPS BETWEEN SUPERVISORS AND SUBORDINATES, AND ORGANIZATIONAL COMMITMENT
Rebecca Mullen

Session 2: 104 Still Hall

Faculty Moderator	Dr. Mary Pat McCarthy
Alumni Moderator	Hope Zimmerman
Rehearsal Moderator	Dr. Kristina Dworek

AN ANALYSIS OF THE EFFECTS OF MUSIC AND MUSICIANSHIP SKILLS ON ATTENTIONAL ABILITIES
Katharine Gannon

THE ACCURACY AND UTILITY OF SPEECH AND LANGUAGE MILESTONE APPS
Brittany Fitzgerald

SPEECH SOUND ACQUISITION IN PEDIATRIC PRELINGUALLY DEAFENED COCHLEAR IMPLANT USERS
Lindsey Wohar

Session 3: 203 Still Hall

Faculty Moderator	Dr. Natasha Dias
Alumni Moderator	Dani Eming
Rehearsal Moderator	Dr. Helen Hampikian

LINKING ERAD AND THE UPR: DEVELOPING A GENETIC SCREEN VIA THE EXPRESSION OF ANTITRYPSIN
Michelle Geytenbeek

THE MITOCHONDRIAL STRESS RESPONSE: DEVELOPING A GENETIC SCREEN UTILIZING 2, 4-DINITROPHENOL
Christian Schill

THE DETECTION OF *BORRELIA BURGDORFERI* IN TICKS IN CLARION BOROUGH
Autumn Fotta

MANIPULATION OF THE HEMATOPOIETIC STEM CELL MICROENVIRONMENT USING A SUBSTRATE OF A MIXED POPULATION OF STROMAL CELLS
Cecelia Harmon

Session 4: 205 Still Hall

Faculty Moderator	Dr. Suzanne Boyden
Alumni Moderator	Erich Spessard
Rehearsal Moderator	Dr. Kurt Regester

ASSESSING THE INFLUENCE OF CANOPY COVER ON BENTHIC POND COMMUNITIES
Tony Kumetis

GAME THEORY APPLIED TO A BASEBALL DRAFT
Garrett Moats

ANIMAL ASSISTED THERAPY AND ANXIETY REDUCTION IN HOSPITALIZED PATIENTS
Taylor McClay

COORDINATION COMPLEXES OF LANTHANIDES AND TETRAKIS (4-PRYIDYL-N-OXIDE) CYCLOBUTANE
Robert Hacku

Session 5: 106 Still Hall

Faculty Moderator	Dr. Annette Rosati
Alumni Moderator	Victoria Reid
Rehearsal Moderator	Prof. Joseph Croskey

TIME AND DIFFICULTY EXPECTATION INTERACTION
Madison Bumbarger

CRYSTAL HEALING: HISTORY, PRACTICE, AND CREDIBILITY
Leah Fryer

ANOTHER ANOTHER ANOTHER CINDERELLA STORY
Kenzi Mundkowsky

MADISON BUMBARGER

Time and Difficulty Expectation Interaction

Looking at how difficulty expectations and time limitations interact to affect test scores may help improve students' grades.

Participants will be students sampled from around Clarion University. They will be randomly assigned to take a standardized test. It is hypothesized that students who have no expectations of difficulty level will have higher averages than students who have difficult expectations, students who are not timed will have higher scores than those who are timed, and time limitations will affect students with difficult expectations more than students with no expectations.

The independent variables are the time limitations and the expectations of the students. Data will be analyzed using a two-way ANOVA test.

Faculty Advisor: Dr. Jeanne Slattery

Madison Bumbarger is from Curwensville, Pa. She is a psychology major with a paralegal studies certification. Upon graduation, she will receive a Bachelor of Science in Psychology degree and Advanced Paralegal Studies Certificate. While pursuing her undergraduate degree, Madison has been named to Dean's List and served as Student Senate vice president. After graduation, Madison plans to earn an M.S. in Forensic Psychology degree, then attend a doctoral program for clinical psychology. She wants to become a criminal profiler for the Federal Bureau of Investigations.

JESSICA DENZER

The Use of Social Media Campaigns in Corporate Charitable Donations

The paper looks at recent social media campaigns started by companies who want to make charitable donations. These companies say that they will give a certain dollar amount to charity for each like, share, or retweet their company receives. But, this may not accurately represent their charitable donations.

The paper focuses on the amount of shares five selected companies received and compares that to the amount of money given to the chosen charity. It is hoped to show the real purpose behind these social media campaigns.

Faculty Advisor: Dr. Jeffrey Eicher

Jessica Denzer is from Murrysville, Pa. Jessica has majors in accounting, personal finance, and corporate finance. Upon graduation, she will receive a BSBA in Accounting & Finance degree. While pursuing her undergraduate career, Jessica was a member of the Phi Eta Sigma Honor Society and Beta Gamma Sigma Honor Society. After graduation, Jessica plans to move to the Carolinas and work in an accounting position for one of the many universities in the area.

BRITTANY FITZGERALD

The Accuracy and Utility of Speech and Language Milestone Apps

My research provides information on five different apps that are available to the public that are geared toward tracking developmental milestones in order to determine if any of them provide accurate information regarding speech and language developmental milestones. This was completed by identifying key ages in speech and language development and comparing the information provided by the apps for each age to evidence-based speech and language developmental norms.

This information allowed me to determine which apps to recommend for parental use to aid in determining if they are developing accordingly. The information was then used to make a pamphlet that will be shared with speech language pathologists and pediatricians so the information can be made available to the public.

Faculty Advisor: Dr. Melissa Brydon

Brittany Fitzgerald is from Sharpsville, Pa. She has a major in speech language pathology and audiology. Upon graduation, Brittany will receive a Bachelor of Science in Health Science degree. While pursuing her undergraduate degree, Brittany made the Dean's List every semester, is a NSSLHA Gold Status Member, and a member of Phi Sigma Eta. After graduating, Brittany plans on continuing her education here at Clarion University in order to earn her master's degree in Speech Language Pathology. After completing her master's degree, she plans on working with children in the school setting.

AUTUMN FOTTA

The Detection of *Borrelia burgdorferi* in Ticks in Clarion Borough

Lyme disease in western Pennsylvania is an issue with which most people in the area are very familiar. The disease is caused by the spirochete bacteria *Borrelia burgdorferi*, which is vectored within ticks, typically of the Ixodes species. The bacteria can be spread to humans and pets when female ticks latch on to the skin of their prey to consume blood.

The objective of this study was to find the relative prevalence of Lyme disease-carrying ticks in commonly used outdoor areas in the Clarion region. This was done by collecting female ticks from within a three-mile radius of Clarion University.

DNA was extracted from the ticks and PCR was performed. PCR was examined using agarose-gel electrophoresis. The RNA was examined for the presence of 16sRNA for *Borrelia burgdorferi*. This bio-marker is found in ticks carrying *Borrelia burgdorferi*.

By identifying the number of female ticks positive for 16sRNA, the likelihood of a female tick carrying Lyme disease can be deduced. This can provide important information to people who spend time outdoors within Clarion Borough.

Faculty Advisor: Dr. Helen Hampikian

Autumn Fotta is from Pittsburgh, Pa. She is a biology pre-veterinarian medicine major with a minor in business administration. Upon graduation, Autumn will receive a Bachelor of Science in Biology degree. While pursuing her undergraduate career, Autumn has been named to the Dean's List every semester. She has also been recipient of the Foundation Honor Scholar (2016-present), the E. James & Patricia Kelley Honors Scholarship (2017-present), the Clarion Academic Scholarship (2016-present) and the Clarion Leadership Award (2016-present). She has also received the Clarion University Alumni Association Scholarship (2018-present), the John W. Mochnick Honors Scholarship (2018-present), the William & Elizabeth Hart Scholarship Endowment (2018-present) and the Lesser Scholarship (2018-present). After graduation, Autumn plans to attend Midwestern University College of Veterinary Medicine.

LEAH FRYER

Crystal Healing:
History, Practice and Credibility

My research project explores different aspects of crystal healing and its credibility. It outlines the history, its uses and arguments for and against this healing method.

Faculty Advisor: Dr. Ralph Leary

Leah Fryer is from Boyertown, Pa. Leah has a major in English with a concentration in writing and a minor in history. Upon graduation, Leah will receive a Bachelor of Arts in English degree. While pursuing her undergraduate career, Leah has been named to the Dean's List. After graduation. Leah plans to attend the University of Chester, England, to receive a master's in Creative Writing: Writing and Publishing Fiction degree.

KATHARINE GANNON

An Analysis of the Effects of Music and Musicianship Skills on Attentional Abilities

This study investigated the impact that listening to and engaging with music might have on an individual's subsequent ability to attend to a visual task. More specifically, the purpose was to determine if having a musical background with well-developed musicianship skills increases an individual's attentional skills compared to those with minimal or no musical background/training.

Often, music programs are the first to be cut when school districts and universities are struggling with finances. This is potentially detrimental not only to typically developing students, but also to students treated by speech-language pathologists.

Because attentional deficits are a common symptom of several disorders treated by speech-language pathologists (e.g., TBI/concussion, autism, visual/auditory processing deficits), it is hoped that this research not only provides descriptive information relevant to typical individuals, but also might shed light on a potential treatment methodology for working with those who are impaired.

Faculty Advisor: Kenneth Staub

Katharine Gannon is from Saxonburg, Pa. She has a major in speech-language pathology and audiology and a minor in music. Upon graduation, Katharine will receive a Bachelor of Science degree. While pursuing her undergraduate career, Katharine was named to the Dean's List every semester, presented research at the 2018 National Collegiate Honors Conference, and received various scholarships over her four years. She was also secretary of the National Student Speech-Language and Hearing Association (2018-2019), the public relations manager of Love Your Melon Campus Crew (2018-2019) and was chosen as Clarion University's representative of the Ali Zaidi Award (2018-2019). After graduation, Katharine plans to earn her master's degree in speech-language pathology. After earning her licensure, she hopes to work with the pediatric population in either a school or private practice setting.

SIRILUK MICHELLE GEYTENBEEK

Linking ERAD and the UPR: Developing a Genetic Screen via the Expression of Antitrypsin

The accumulation of aberrant and aggregation-prone proteins within the Endoplasmic Reticulum (ER) can play a large role in cellular stress and physical manifestation of genetic disorders, such as Alpha-1 Antitrypsin Deficiency (ATD). While the disease states of ATD have been extensively studied, the mechanism of misfolded protein removal within the ER is not fully understood.

There are two biochemical pathways that exist to manage these misfolded proteins: Endoplasmic Reticulum Associated Degradation (ERAD) and the Unfolded Protein Response (UPR). ERAD functions to identify newly synthesized misfolded proteins and retro-translocates them out of the ER to be degraded by the 26S proteasome. Under overwhelming stress conditions, the inducible UPR pathway acts as an intracellular transmembrane signaling cascade to initiate specific gene expression.

Prior studies revealed that the Add66p protein is essential in the assembly of the 26S proteasome; therefore, deletion of the ADD66 gene will disrupt proteasome production in the ERAD pathway. Furthermore, the UPR targets the ADD66 gene during times of ER stress. The stress-inducing agent of focus is the expression of A1PiZ, a mutant form of the human gene A1Pi (Antitrypsin).

Two wild-type yeast strains and a strain lacking ADD66 (add66Δ) were utilized. The goal of this project is to determine if A1PiZ with add66Δ will result in a defective growth phenotype. If a reproducible growth defect can be identified and used as a positive baseline control, this experimental method may be used to screen and identify new proteins involved in ERAD, UPR or both.

Faculty Advisor: Dr. Craig Scott

Siriluk Michelle Geytenbeek is from Garnet Valley, Pa. She is a biology (pre-med) major. Upon graduation, she will receive a Bachelor of Science in Biology degree. While pursuing her undergraduate degree, Michelle has been a member on this project for the last three years. This research was presented at the annual CPUB conference, consisting of Pennsylvania state universities, and won first place honors in the molecular biology category in 2017 and 2018. After graduation, Michelle plans to attend Philadelphia College of Osteopathic Medicine. She has a passion for the surgical field and hopes to find herself as a practicing surgeon in the next 10 years. “As I look back on my time at Clarion, I’d like to thank my mom and dad for inspiring me and always pushing me to be the best I can be. I’d also like to thank Dr. Scott and all the amazing faculty who have helped me over the last four years. It has been a crazy adventure and I’m excited for all that is yet to come.”

ROBERT HACKU

Coordination Complexes of Lanthanides and Tetrakis (4-pryidyl-N-oxide) Cyclobutane

The novel tetrakis (4-pyridyl-N-oxide) cyclobutane was isolated and assessed for compatibility in a heavy metal organic framework.

Tetrakis (4-pyridyl) cyclobutane (TPCB) was prepared from a solid-state [2+2] photocycloaddition of two 1,2-bis(4-pyridyl) ethylene (BPE) molecules templated by resorcinol. TPCB was isolated from the template crystalline mixture and reacted with hydrogen peroxide to form tetrakis (4-pyridyl-N-oxide) cyclobutene (TPNO). TPNO was crystallized by slow evaporation from aqueous solution after acetone layering.

TPCB, BPE and TPNO were analyzed for boiling point and by nuclear magnetic resonance (NMR) spectroscopy. This work also improves upon the isolation and quantification of TPCB from a mixture of TPCB and BPE.

Faulty Advisor: Dr. Jaqueline Knaust

Robert Hacku is from Meriden, Conn. He is a chemistry major with a minor in math. Upon graduation, he will receive a Bachelor of Science in Chemistry degree. While pursuing his undergraduate degree, Robert was a member of the men's swim team for three years and holds records in the 200- and 400-medley relays. He was a scholar-athlete all three years. After graduation, Robert will be attending the University of Pittsburgh's Chemical Engineering Ph.D. program.

CECELIA HARMON

Manipulation of the Hematopoietic Stem Cell Microenvironment Using a Substrate of a Mixed Population of Stromal Cells

The hematopoietic stem cell (HSC) is a type of multipotent cell most abundant in the bone marrow. These cells exhibit the capacity to self-renew or differentiate to produce the majority of blood cells found in circulation including erythrocytes, thrombocytes and leukocytes.

Regulation of hematopoiesis is critical in order to maintain a healthy pool of progenitor cells, while producing appropriate numbers of differentiated cell types to compensate for blood cell turnover. This regulation is conducted through a complex combination of signaling molecules, cell-cell interactions and interactions with the extracellular matrix. For this reason, culture of the HSC in vitro and outside of the native microenvironment within the bone marrow lend to ready differentiation and loss of multipotency.

To create an in vitro culture system for HSCs more like the microenvironment of the bone marrow, we plan on assessing stromal cells for their ability to support culture of multipotent hematopoietic cells. Stromal cells used will be identified based on morphological characteristics viewed microscopically.

Colony-forming unit assays will be performed on bone marrow aspirates cultured with a stromal cell base which has been previously extracted from bone marrow to determine abundance and frequency of HSCs. Further attempts to recreate microenvironment stimuli in a culture system may have implications for research and personalized medicine.

Faculty Advisor: Dr. Douglas Smith

Cecelia Harmon is from Fairmount City, Pa. Cecelia is a biology major. Upon graduation, she will receive a Bachelor of Science in Biology degree. While pursuing her undergraduate degree, Cecelia was named to the Dean's List for five semesters. She was recipient of the France Allison Honors Scholarship (2018), the Ruth Bleakney Montgomery Science and Mathematics Award (2017), the Highmark Healthcare Scholarship (2017) and the Honors Foundation Scholarship (2017-2018). She also received the Kim Rutherford Memorial Scholarship (2017-2018), the full Board of Governors Scholarship (2016-2019) and the Minnie D. Croyle Scholarship (2016-2018). After graduation, Cecelia plans on attending The Virginia-Maryland College of Veterinary Medicine in Blacksburg, Va., seeking a doctorate of veterinary medicine, tracking in mixed animal medicine. After Cecelia receives her licensure, she plans on returning to Clarion County to work in general practice. Cecelia also has a special interest in providing low-cost spays and neuters.

TONY KUMETIS

Assessing the Influence of Canopy Cover on Benthic Pond Communities

Leaf litter is a primary source of energy in many aquatic systems and is a strong influence on the structure and function of woodland pond ecosystems. Canopy cover, light levels and leaf litter influence the amount of photosynthetic production in a pond system, which in turn affects the benthic community composition.

The objective of this study was to quantify the seasonal changes in biomass of the benthic invertebrate communities in closed canopy and open canopy ponds. We would expect a closed canopy pond with an input of leaf litter detritus to have more shredding macroinvertebrates and an open canopy pond with active photosynthesis to have more scraping macroinvertebrates.

Samples were taken in June, August and October 2017 using benthic drop-can sampling methods at two permanent ponds located on Pennsylvania State Game Land 63 in Clarion County. We found a higher total macroinvertebrate biomass in the closed pond than in the open pond (2.50g/m2 compared to 0.66g/m2).

Primary consumer biomass and diversity also differed between pond types throughout the year. October samples in the open pond had higher biomass than June samples (2.50g/m2 compared to 0.37g/m2), which may be from amphibian predators leaving the ponds by the October collection or from variation in community structures due to insect emergencies in the spring and early summer. Ponds with large amounts of leaf litter inputs had declined levels of biomass and order richness while insignificantly increasing community.

Faculty Advisors: Dr. Kurt Regester and Dr. Steve Harris

Tony Kumetis is from Reynoldsville, Pa. Tony has a major in environmental biology with a minor in sustainability. Upon graduation, Tony will receive a Bachelor of Science degree. While pursuing his undergraduate degree, Tony was 2016 and 2017 recipient of the Dr. Dinsmore Faculty Ecology Scholarship and received the Iron Furnace Chapter of Trout Unlimited's Coldwater Scholarship in 2018. Tony also presented at the 2018 and 2019 Pennsylvania Wildlife Society Conferences and the 2018 Entomological Society of Pennsylvania conference. After graduation, Tony plans on finding a job working with aquatic ecosystems, possibly with the DEP, Trout Unlimited, a conservation district or the Pennsylvania Fish and Boat Commission.

TAYLOR McCLAY

Animal Assisted Therapy and Anxiety Reduction in Hospitalized Patients

Hospitals can elicit a number of emotions from those who end up in them, responses such as fear, anxiety and a general sense of discomfort. Therapy animals have often been used to decrease these feelings in people who suffer from anxiety disorders.

Some of the major factors that play a role in promoting health and healing are decreased feelings of anxiety and fear, and an increased feeling of comfort. There have been a few studies that focus on pediatric oncology units, mental health units and nursing homes but not a lot of research on other floors of the hospital such as the medical-surgical floors.

This study will look at therapy dog handlers' observations on how their therapy dogs affect the patients they have seen during hospital visits. Gaining more knowledge on whether therapy dogs help decrease emotions such as anxiety and fear in patients in the hospital can help determine whether or not it would be beneficial to try to implement these programs in more hospitals around the country.

Faculty Advisor: Cheryl Bowersox

Taylor McClay is from Greenville, Pa. Taylor is a nursing major with a minor in psychology. Upon graduation, Taylor will receive a Bachelor of Science in Nursing degree. While pursuing her undergraduate career, Taylor presented research at the NCHC conference in 2016 and 2017, was named to the Dean's list every semester and she was inducted into the freshman honor society Phi Eta Sigma. After graduation, Taylor plans to move to Hawaii to begin her career as a nurse. After she gets some experience, she hopes to work as an emergency department nurse at Queens Hospital in Honolulu, a level 1 trauma center.

GARRETT MOATS

Game Theory Applied to a Baseball Draft

This project will use game theory to look at a baseball draft to see if the strategy of caring about what your rival picks either helps the teams or hurts the teams in the draft.

Faculty Advisor: Dr. Daniel Shifflet

Garrett Moats is from Dallastown, Pa. Garrett has a major in secondary education mathematics and physics. Upon graduation, Garrett will receive a Bachelor of Science in Education degree. While pursuing his undergraduate degree, Garrett was a member of Pi Mu Epsilon. After graduation, Garrett plans to teach at the high school level in math or physics, or both..

KRISTA MOSI

An Analytical Study of Post-Communist States and the Status of Their Economic Transition 25+ Years Out

This project examines the 23 countries in their transition from command economies to market economies as a result of the end of the Cold War and the end to communist rule. The project takes a look, 25-plus years later, at the status of the transition process. In particular, countries are compared by method of transition.

The primary methods of transition in the beginning stemmed from two schools of thought, the Big-Bang approach and the Gradual Reform approach. These approaches refer to the speed in which the country chose to privatize and liberalize its own economy.

As their names infer, the Big-Bang approach was about fast privatization. Gradual Reform was slower. With years of economic data and multiple statistical studies performed, we can examine which countries chose which approaches, and the extent to which they carried out this approach. From this we can determine the success of transition through output measures such as GDP growth and human development indicators.

The project will statistically interpret the input variables that affect transition and their impact. By separating the countries by result and method of transition, the project will ultimately compare overall performance levels and the well-being of these groups to make conclusions if their choice of transition had a long-term effect on their success today.

Faculty Advisor: Dr. Susan Zumas

Krista Mosi is from South Park, Pa. Krista has a major in international business, economics with an international concentration and a minor in political science. Upon graduation, Krista will receive B.S.B.A. International Business, and B.S.B.A. Business Economics degrees. While pursuing her undergraduate degree, Krista was a recipient of the Scholar-Athlete Award (2015-present), a member of Beta Gamma Sigma (2018-present), and a member of Phi Sigma Alpha (2019 inductee). After graduation, Krista hopes to find a job in her field of study.

REBECCA MULLEN

Are Performance Appraisals Necessary for Firms? The Influence of Performance Appraisal Regularity on Organizational Citizenship Behavior, Relationships Between Supervisors and Subordinates and Organizational Commitment

Performance appraisals have long been considered a useful tool to effectively and efficiently manage organizations. However, both researchers and practitioners alike challenge the effectiveness and necessity of performance appraisals.

In the current study, we hypothesize that the regularity of performance appraisals influence organizational outcomes, including organizational citizenship behavior relationships between supervisors and subordinates, and organizational commitment.

Through the collection of data from 65 employees working at a governmental agency in western Pennsylvania, we found that while regular performance appraisals can increase individual employee organizational citizenship behavior and their commitment to the organization, only irregular performance appraisals can increase the relationship between supervisors and subordinates. These finding have both theoretical and practical implications.

Faculty Advisor: Dr. Ning Chen

Rebecca Mullen is from Franklin, Pa. She has majors in human resources and business management with a minor in psychology. Upon graduation, she will receive a Bachelor of Science in Business Administration degree. While pursuing her undergraduate career, Rebecca was a member of Beta Gamma Sigma International Business Honor Society and recipient of the Excellence in Service to Students Award (2018), and amember of National Society of Leadership and Success. After graduation, Rebecca plans to seek a career in human resources before pursuing a Ph.D. in human resources management or organizational behavior.

KENZI MUNDKOWSKY

Another Another Another Cinderella Story

The tale of Cinderella exists in almost every culture we know today. It has been told to the point where the phrase "Cinderella story" can be found in almost every facet of human existence. However, more than anyone else, Disney has undertaken this story time and time again, often with little time between movies.

With some being just four years apart from each other, one can't help but wonder, "Why keep retelling the same story? What do these new Cinderella plots tell us that the old ones don't?"

In this presentation, I will explore the character evolution of some of Disney's most well known Cinderellas to see what, if anything, each girl adds to history and what she can tell us about her time.

Faculty Advisor: Dr. Melissa Downes

Kenzi Mundkowsky is from West Springfield, Pa. She is a secondary English education major. Upon graduation, she will receive a Bachelor of Science in Education degree. While pursuing her undergraduate degree, Kenzi was a drum major in the Golden Eagle Marching Band (2016-2018) and Kappa Kappa Psi vice president of membership (2018-2019). After graduation, Kenzi plans to work for a school back home, get married and change lives in the classroom.

CHRISTIAN SCHILL

The Mitochondrial Stress Response: Developing a Genetic Screen Utilizing 2, 4-Dinitrophenol

Cellular stress responses are an understudied, yet vital part of cell physiology. Metabolic biochemical pathways have many implications in human diseases, such as neurodegenerative diseases, cystic fibrosis and diabetes. These pathways, such as the Krebs Cycle and Oxidative Phosphorylation, are subjected to alterations when they are under cellular stress conditions.

Using Saccharomyces cerevisiae as a model organism, it is our goal to utilize a yeast mutant knockout library, an isogenic collection of mutant strains, to assay genes for their involvement in such stress responses. This library can help identify which genes are involved the cell's response to its exposure to 2,4-dinitrophenol (DNP), a known causative agent of cellular metabolic stress.

Greater than 50 mutant strains have been studied to date and differences in yeast growth have been recorded and statistically analyzed. Furthermore, utilizing Gateway Cloning techniques, one particular gene, COQ11, has been further studied by attempting genetic rescue experiments to gather evidence which further implicates this gene in the biochemical pathways that respond to mitochondrial stress.

Faculty Advisor: Dr. Craig M. Scott

Christian Schill is from Clarion, Pa. He has a major in molecular biology and biotechnology with a minor in chemistry and a certificate in Opioid Treatment Specialist. Upon graduation, Christian will receive a Bachelor in Science degree. While pursuing his undergraduate degree, Christian attended the Commonwealth of Pennsylvania University Biologists Annual Conference and earned awards in the student presentations in cell and molecular biology research: first place in 2017 and second place in 2018. After graduation, Christian will begin the medical doctor program at the Lewis Katz School of Medicine at Temple University, where he will be one of 30 students studying at the St. Luke's University Hospital Campus. He plans to practice surgical or medical neurology and pursue clinical research into neurodegenerative diseases.

LINDSEY WOHAR

Speech Sound Acquisition in Pediatric Prelingually Deafened Cochlear Implant Users

This meta-analysis aims to synthesize the findings of previous researchers in order to establish and validate norms of phoneme acquisition in prelingually deafened children after activation of at least one cochlear implant.

A total of six studies were analyzed in detail, three on vowel acquisition in this population and three on consonant acquisition in this population. The author abstracted each article, provided a summary of the most relevant results, discussed the findings of each individual study and then came to overall conclusions by comparing the methods and findings of the different researchers.

The main purpose of this study was to contribute to the formation of evidence-based practice for this population and, as such, improve therapy practices by speech-language pathologists. The primary finding of this study was that, on average, most children whose cochlear implant is activated between nine months of age and about eight years of age will progress in the acquisition of phonemes at relatively the same rate and order.

Faculty Advisor: Dr. Kristina Dworek

Lindsey Wohar is from Monongahela, Pa. Lindsey is a speech language pathology and audiology major. Upon graduation, she will receive a Bachelor of Science in Speech Language Pathology and Audiology degree. While pursuing her undergraduate career, Lindsey was named to the Dean's List all semesters, was awarded 12 scholarships and was accepted into five doctoral programs. After graduation, Lindsey will continue her education as a doctoral student pursuing her Au.D. She plans to become an audiologist and has a special interest in advocacy for the deaf community and reducing access barriers for this population.

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2018-2019

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Dr. Rod Raehsler, Honors Program Director

Dr. Annette Rosati, English and Modern Languages Department

Dr. Daniel Shifflet, Mathematics Department

Dr. Kevan Yenerall, Social Sciences Department

Dr. Natasha J. Dias, Biology and Geosciences Department

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