

# 2022 Biology Department Senior Project Symposium

## Allegheny College

### Student Presentations:

**Monday & Tuesday, May 9-10, 1:10-4:30 p.m.**

Steffee Hall of Life Sciences  
Rooms B.208, B.212, and B.306

The Department of Biology is pleased to host its Twenty-Fourth Annual Senior Project Symposium to celebrate the biological research accomplishments of the Class of 2022. All members of the college community are invited and welcome to attend. Juniors, sophomores, and freshmen who are majoring or intending to major in Biology are especially encouraged to attend and participate.

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### Instructions for speakers

*Time limits.* Presentations will be limited to a maximum of 20 minutes - 15 minutes for formal presentation and 5 minutes for questions. Moderators at each session will enforce these time limits.

*Audiovisual equipment.* To ensure smooth transitions between speakers, students should either load their PowerPoint file onto the classroom presentation computer OR open their Google Slides presentation on the classroom computer **by 12:45 pm on the day of their presentation.**

*Evaluation of presentations.* Biology department faculty will evaluate talks based on nine criteria:

- (1) Adequacy of the introduction for persons unfamiliar with the specific area of research.
- (2) Clarity of the statement of objectives and hypotheses.
- (3) Adequacy of the explanation of methods and results.
- (4) Interpretation and discussion of results within the context of the particular sub-discipline.
- (5) Overall organization and clarity.
- (6) Engaging and enthusiastic delivery.
- (7) Quality and appropriateness of visual aids.
- (8) Adherence to the 15-minute time limit.
- (9) Effectiveness of response to questions.

Students should prepare their presentations with these criteria in mind.

## 2022 Biology Senior Project Symposium

### Monday, May 9

| Time        |                | <b>Steffee B.208</b><br>M=Humphreys, T=Mumme, E=Nelson                                                                               | <b>Steffee B.212</b><br>M=Kadmiel, T=Hersh, E=Torres                                                                                                          | <b>Steffee B.306</b><br>M=Whitenack, T=Venesy, E=French                                                                                                                |
|-------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1:10</b> | <i>Speaker</i> | <b>Thomas Uranga</b>                                                                                                                 | <b>Jordan Mehalko</b>                                                                                                                                         | <b>Drew Hrycko</b>                                                                                                                                                     |
|             | <i>Title</i>   | Genes Implicated in Macular Degeneration and Their Regulation Through Dexamethasone Utilizing Human Retinal Cell Line                | Therapeutic Methods to Reduce Nerve Pain: A Model of Complex Regional Pain Syndrome                                                                           | The Independent Function of Mms21 E3 SUMO Ligase                                                                                                                       |
|             | <i>Advisor</i> | <i>Dr. Mahita Kadmiel</i>                                                                                                            | <i>Dr. Lauren French</i>                                                                                                                                      | <i>Dr. Yee Mon Thu</i>                                                                                                                                                 |
| <b>1:30</b> | <i>Speaker</i> | <b>Antony Bishay</b>                                                                                                                 | <b>Brian Beck</b>                                                                                                                                             | <b>Jyl Russotti</b>                                                                                                                                                    |
|             | <i>Title</i>   | An Analysis of Frameshift Mutation on Mms21 Activity in DNA Damage Repair                                                            | Understanding if Combination Drug Therapy Decreases Antibiotic-Resistance in <i>S. marcescens</i>                                                             | Minibrain overexpression and its relationship to the Down syndrome cell adhesion molecule and motor function decline in <i>Drosophila melanogaster</i>                 |
|             | <i>Advisor</i> | <i>Dr. Yee Mon Thu</i>                                                                                                               | <i>Dr. Tricia Humphreys</i>                                                                                                                                   | <i>Dr. Brad Hersh</i>                                                                                                                                                  |
| <b>1:50</b> | <i>Speaker</i> | <b>Alivia Kurelowech</b>                                                                                                             | <b>Emily Jones</b>                                                                                                                                            | <b>Margot Joyce</b>                                                                                                                                                    |
|             | <i>Title</i>   | The Effects of the Anesthetic ABP-700 and Its Metabolite CPMA on the Kv4.2 Channel                                                   | Inhibition of SUMO:SIM Interactions Involved in DNA Damage Repair in <i>Saccharomyces cerevisiae</i>                                                          | Understanding how the chromosomal passenger complex regulates the spindle assembly checkpoint in the presence of replication stress in <i>Saccharomyces cerevisiae</i> |
|             | <i>Advisor</i> | <i>Dr. Lauren French</i>                                                                                                             | <i>Dr. Yee Mon Thu</i>                                                                                                                                        | <i>Dr. Yee Mon Thu</i>                                                                                                                                                 |
| <b>2:10</b> | <i>Speaker</i> | <b>Jacob Levit</b>                                                                                                                   | <b>Ashley Linton</b>                                                                                                                                          | <b>Jennifer Peralta</b>                                                                                                                                                |
|             | <i>Title</i>   | These Teeth Don't Bite: Speciation in Filter Feeding Elasmobranchs in Relation to Oceanic Conditions Over the Past 450 Million Years | Impact of DHEA model of Polycystic Ovary Syndrome (PCOS) on Cognitive Function in Mice                                                                        | Habitat Quality Implications on Red-Backed Salamanders ( <i>P. cinereus</i> )                                                                                          |
|             | <i>Advisor</i> | <i>Dr. Lisa Whitenack</i>                                                                                                            | <i>Dr. Lauren Rudolph</i>                                                                                                                                     | <i>Dr. PJ Torres</i>                                                                                                                                                   |
| <b>2:30</b> | <i>Speaker</i> | <b>Kaitlynn Rees</b>                                                                                                                 | <b>Khalid Mohamed</b>                                                                                                                                         | <b>Jennifer Baum</b>                                                                                                                                                   |
|             | <i>Title</i>   | Effects of Dietary Medium Chain Fatty Acids from Virgin Coconut Oil on Anxiety-Like Behavior in Female Mice                          | The dose dependence and exposure time effect of CPMA on Kv4.2 channel inhibition                                                                              | Investigating the UBX-Regulated Network in Wing and Haltere Disc Development of <i>Drosophila melanogaster</i>                                                         |
|             | <i>Advisor</i> | <i>Dr. Lauren Rudolph</i>                                                                                                            | <i>Dr. Lauren French</i>                                                                                                                                      | <i>Dr. Brad Hersh</i>                                                                                                                                                  |
| <b>2:50</b> |                | <b>***** COOKIE BREAK! Steffee B201 *****</b>                                                                                        |                                                                                                                                                               |                                                                                                                                                                        |
| <b>3:10</b> | <i>Speaker</i> | <b>Alex Paluselli</b>                                                                                                                | <b>Gannon McDonough</b>                                                                                                                                       | <b>Gabriel DeVore</b>                                                                                                                                                  |
|             | <i>Title</i>   | Developing a Reliable Method of DNA Extraction for Ixodes scapularis and Assessing Lyme Disease Prevalence Across Life Stages        | Understanding the Effects of Continuous Rap1 Sumoylation on Cell Longevity in <i>Saccharomyces cerevisiae</i>                                                 | Use of the GAL4/UAS System to Generate a Photosynthesis Pigment within the <i>D. melanogaster</i> Eye                                                                  |
|             | <i>Advisor</i> | <i>Dr. Matthew Venesy</i>                                                                                                            | <i>Dr. Yee Mon Thu</i>                                                                                                                                        | <i>Dr. Brad Hersh</i>                                                                                                                                                  |
| <b>3:30</b> | <i>Speaker</i> | <b>Nicklaus Weber</b>                                                                                                                | <b>Lucas Foster</b>                                                                                                                                           | <b>Paige Genewick</b>                                                                                                                                                  |
|             | <i>Title</i>   | Testing the Effects of Cadherin 99C on Alcohol Sensitivity Using RNAi                                                                | Investigating the Osmotic Stress Tolerance of the Tardigrade <i>Hypsibius exemplaris</i>                                                                      | Contributions of Temperate Freshwater Fishes to Nutrient Cycling in Northwestern Pennsylvania                                                                          |
|             | <i>Advisor</i> | <i>Dr. Brad Hersh</i>                                                                                                                | <i>Dr. Tricia Humphreys</i>                                                                                                                                   | <i>Dr. PJ Torres</i>                                                                                                                                                   |
| <b>3:50</b> | <i>Speaker</i> | <b>Fabrizio Reategui</b>                                                                                                             | <b>Christian Calle</b>                                                                                                                                        | <b>Riley Sawyer</b>                                                                                                                                                    |
|             | <i>Title</i>   | The Effects of Meditation on Physiological Markers of Stress in University Students: A Systematic Review                             | The Effects of Temperature and Acclimation Period on Batrachochytrium dendrobatidis infection burden in the terrestrial salamander, <i>Plethodon cinereus</i> | Modeling connective tissue disorders via generation of specific collagen mutations and CRISPR/Cas9 genome editing in <i>Drosophila melanogaster</i>                    |
|             | <i>Advisor</i> | <i>Dr. Lauren French</i>                                                                                                             | <i>Dr. Matthew Venesy</i>                                                                                                                                     | <i>Dr. Brad Hersh</i>                                                                                                                                                  |
| <b>4:10</b> | <i>Speaker</i> | <b>Nyonna Towler</b>                                                                                                                 | <b>Samantha Mill</b>                                                                                                                                          | <b>Alexandra Slater</b>                                                                                                                                                |
|             | <i>Title</i>   | Levels of Innexin Expression Required for the <i>Drosophila melanogaster</i> Germline and Soma to Function Properly                  | Inhibitory Effects of Natural Antimicrobials: Allicin, Melaleuca Oil, and Manuka Honey on <i>Haemophilus ducreyi</i>                                          | Exploring the cross-talk between Estradiol and Dexamethasone in In Vitro Wound Healing in Human Retinal Pigmented Epithelial Cells                                     |
|             | <i>Advisor</i> | <i>Dr. Brad Hersh</i>                                                                                                                | <i>Dr. Tricia Humphreys</i>                                                                                                                                   | <i>Dr. Mahita Kadmiel</i>                                                                                                                                              |

**2022 Biology Senior Project Symposium**  
**Tuesday, May 10**

| Time        |                | <b>Steffee B.208</b><br>M=Venesky, T=French, E=Humphreys                                                  | <b>Steffee B.212</b><br>M=Rudolph, T=Thu, E=Mumme                                                                                        | <b>Steffee B.306</b><br>M=Hersh, T=Torres, E=Kadmiel                                                                                          |
|-------------|----------------|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1:10</b> | <i>Speaker</i> | <b>Nabil Agag</b>                                                                                         | <b>Madelyn Kapfhammer</b>                                                                                                                | <b>Allison Williams</b>                                                                                                                       |
|             | <i>Title</i>   | Investigating combinatorial effects of 8CPT treatment on <i>gskA</i> null mutants in deterring chemotaxis | Going VIRALL: A Tool for Advancing Student Implementation of Computational SIR and SEIR Disease Transmission Models in Biology Education | Characterization of Histone Variant H2a.z in DNA Damage Response and Repair                                                                   |
|             | <i>Advisor</i> | <i>Dr. Margaret Nelson</i>                                                                                | <i>Dr. Matthew Venesky</i>                                                                                                               | <i>Dr. Yee Mon Thu</i>                                                                                                                        |
| <b>1:30</b> | <i>Speaker</i> | <b>Emily Orr</b>                                                                                          | <b>Connor Nazarczyk</b>                                                                                                                  | <b>Genesis Pena</b>                                                                                                                           |
|             | <i>Title</i>   | The Incidence and Effects of Shin Splints Among Division III Cross Country Athletes                       | <i>Dictyostelium</i> as a Model for the Immune System: A Possible Role for Stat Proteins in Phagocytosis                                 | Effects of Polycystic Ovarian Syndrome on Cognitive Behavior in Mice                                                                          |
|             | <i>Advisor</i> | <i>Dr. Lisa Whitenack</i>                                                                                 | <i>Dr. Margaret Nelson</i>                                                                                                               | <i>Dr. Lauren Rudolph</i>                                                                                                                     |
| <b>1:50</b> | <i>Speaker</i> | <b>Alexis Pham</b>                                                                                        | <b>David Salazar II</b>                                                                                                                  | <b>Kate Christie</b>                                                                                                                          |
|             | <i>Title</i>   | The Effects of Virgin Coconut Oil on Cognitive Performance in Adult Female Mice                           | Temperature and Acclimation Period, and its Effect on Oxygen Consumption in <i>Mus musculus</i>                                          | Lactobacilli Change the Biofilm Composition of <i>Haemophilus ducreyi</i>                                                                     |
|             | <i>Advisor</i> | <i>Dr. Lauren Rudolph</i>                                                                                 | <i>Dr. Matthew Venesky</i>                                                                                                               | <i>Dr. Tricia Humphreys</i>                                                                                                                   |
| <b>2:10</b> | <i>Speaker</i> | <b>Ethan Lee</b>                                                                                          | <b>Olivia D'Andrea</b>                                                                                                                   | <b>Elyce Reyes</b>                                                                                                                            |
|             | <i>Title</i>   | A Study of the Distribution and Abundance of Non-Native Mussels in Conneaut Lake                          | Lactobacillus vaginalis Limits <i>Haemophilus ducreyi</i> Growth in Co-Cultures at Specific Time Points                                  | How does varying dosages of Bd affect Red-backed Salamanders ability to participate in competition?                                           |
|             | <i>Advisor</i> | <i>Dr. PJ Torres</i>                                                                                      | <i>Dr. Tricia Humphreys</i>                                                                                                              | <i>Dr. Matthew Venesky</i>                                                                                                                    |
| <b>2:30</b> | <i>Speaker</i> | <b>Alex Isenberg</b>                                                                                      | <b>Taylor Besch</b>                                                                                                                      | <b>Amaya Jenkins</b>                                                                                                                          |
|             | <i>Title</i>   | Sex Differences in Ground Reaction Force in Dominant Leg Saut de Chats                                    | The Effects of Glucocorticoids on Migration and Tight Junction Proteins in Human Retinal Pigmented Epithelial Cells                      | Do rats go through breakups? Sex differences in behavior and CORT response after cagemate separation and the effects of an Oxytocin treatment |
|             | <i>Advisor</i> | <i>Dr. Whitenack</i>                                                                                      | <i>Dr. Mahita Kadmiel</i>                                                                                                                | <i>Dr. Ron Mumme</i>                                                                                                                          |
| <b>2:50</b> |                | <b>***** COOKIE BREAK! Steffee B201 *****</b>                                                             |                                                                                                                                          |                                                                                                                                               |
| <b>3:10</b> | <i>Speaker</i> |                                                                                                           |                                                                                                                                          |                                                                                                                                               |
|             | <i>Title</i>   |                                                                                                           |                                                                                                                                          |                                                                                                                                               |
|             | <i>Advisor</i> |                                                                                                           |                                                                                                                                          |                                                                                                                                               |
| <b>3:30</b> | <i>Speaker</i> |                                                                                                           |                                                                                                                                          |                                                                                                                                               |
|             | <i>Title</i>   |                                                                                                           |                                                                                                                                          |                                                                                                                                               |
|             | <i>Advisor</i> |                                                                                                           |                                                                                                                                          |                                                                                                                                               |
| <b>3:50</b> | <i>Speaker</i> |                                                                                                           |                                                                                                                                          |                                                                                                                                               |
|             | <i>Title</i>   |                                                                                                           |                                                                                                                                          |                                                                                                                                               |
|             | <i>Advisor</i> |                                                                                                           |                                                                                                                                          |                                                                                                                                               |
| <b>4:10</b> | <i>Speaker</i> |                                                                                                           |                                                                                                                                          |                                                                                                                                               |
|             | <i>Title</i>   |                                                                                                           |                                                                                                                                          |                                                                                                                                               |
|             | <i>Advisor</i> |                                                                                                           |                                                                                                                                          |                                                                                                                                               |