

College of Arts and Sciences  
Westbrook College of Health Professions

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September 23, 2023



UNIVERSITY OF  
NEW ENGLAND







### 63. Goat Island Alternative Energy Project

Student Author(s) Cameron Indeck '22 | \_\_\_\_\_, .D. \_\_\_\_\_ Faculty Advisor(s)

Abstract

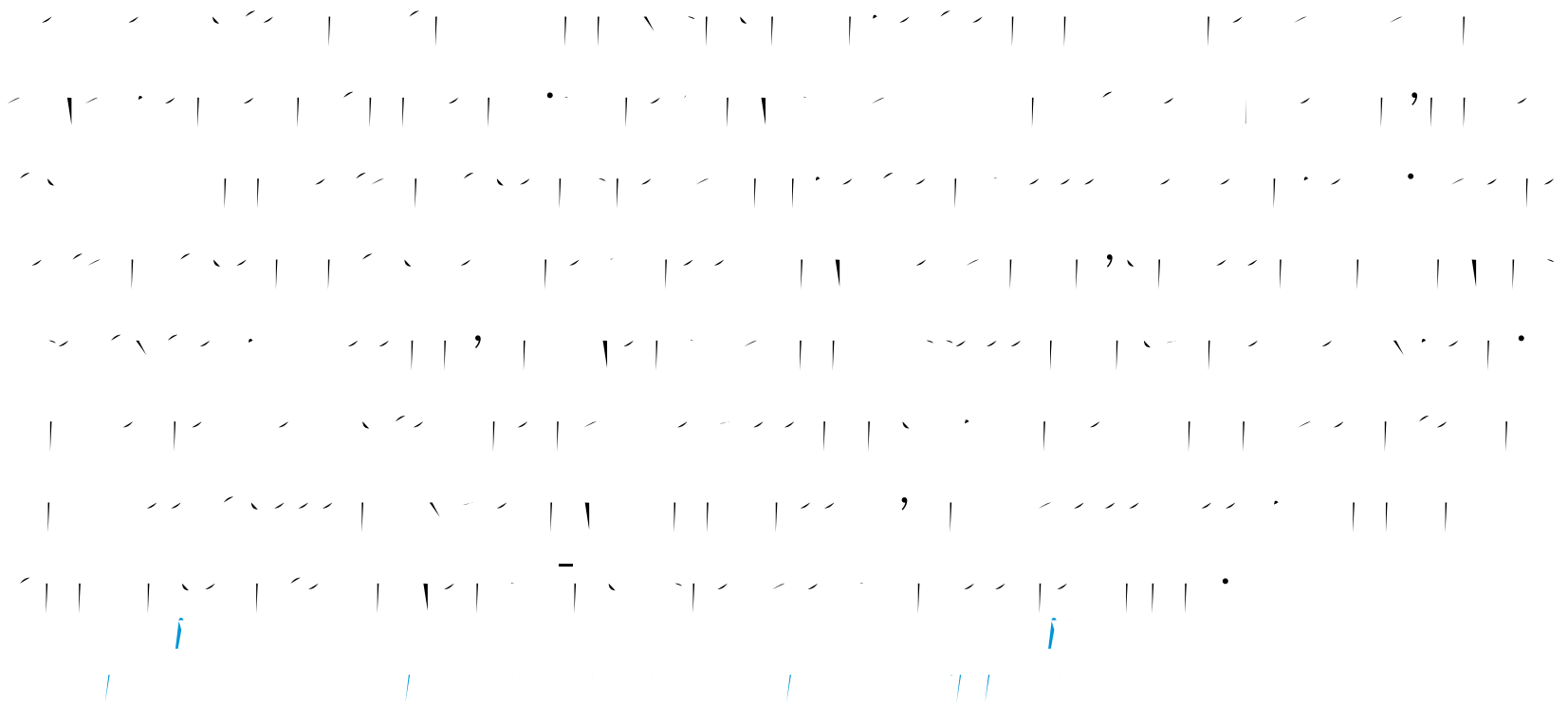
Goat Island is a small island in the western part of the Chesapeake Bay. It was first settled in 1833. The island is currently owned by the National Park Service and is used as a research station for the study of the effects of climate change on the environment. The island is a unique and important part of the Chesapeake Bay ecosystem and is a valuable resource for the study of the effects of climate change on the environment.

Funded by

The project was funded by the National Park Service and the National Science Foundation.

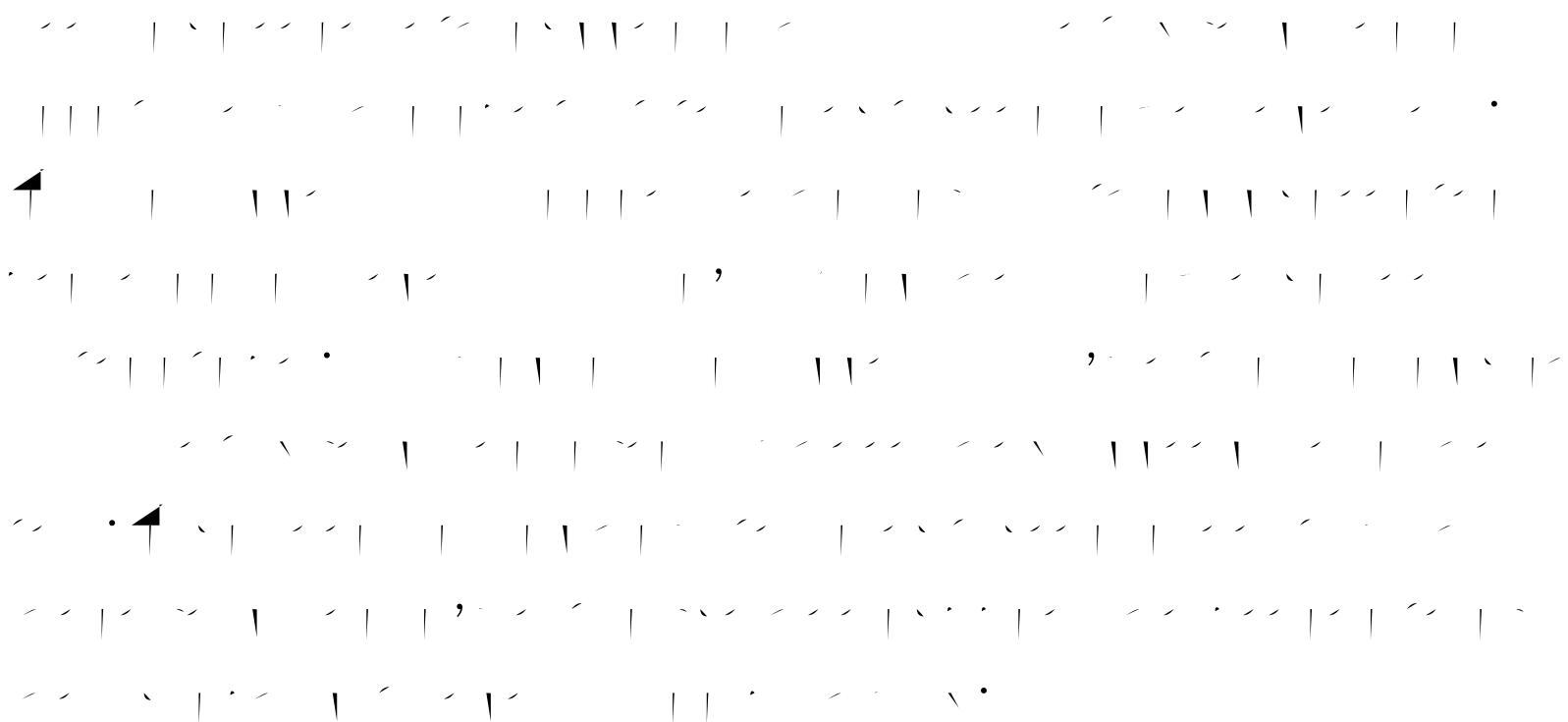
## 1. Novel Cultivation Technique for a Common Species: Sea Lettuce (*Ulva lactuca*)

Sophia Tearman '25 | C B , .D.



## 2. Using In Vivo Tagged RNA to Examine Autophagic Degradation of RNA Decay Fragments

Dez Schrankel '24 | G , .D.



### 3. The Effects of Vegetation Dieback Areas on New England Salt Marsh Vegetation

Caroline Fales '25 | *B.S.*, *D.*, *D.*

Abstract: This study examines the effects of vegetation dieback areas on New England salt marsh vegetation. The research focuses on the impact of dieback on the structure and function of salt marsh ecosystems. The study area is located in the coastal region of New England, where salt marshes are a vital part of the landscape. The research aims to understand how dieback affects the growth and survival of salt marsh plants, and how this in turn affects the overall health and resilience of the ecosystem. The study uses a combination of field observations and laboratory experiments to investigate the effects of dieback on plant growth and survival. The results of the study show that dieback has a significant negative impact on the growth and survival of salt marsh plants. This is particularly true for the most sensitive species, which show a marked decline in growth and survival in dieback areas. The study also found that dieback has a significant impact on the structure and function of salt marsh ecosystems. This is evident in the reduced biomass and productivity of dieback areas, as well as the increased erosion and sedimentation that occurs in these areas. The study concludes that dieback is a major threat to the health and resilience of salt marsh ecosystems in New England. It is therefore essential to develop effective strategies to prevent and manage dieback in these ecosystems.

### 4. Impact of Prophylactic Ceftriaxone on Antimicrobial Resistance in Out-of-Hospital Cardiac Arrest Patients

Cailyn Wheeler '25 | *B.S.*, *D.*

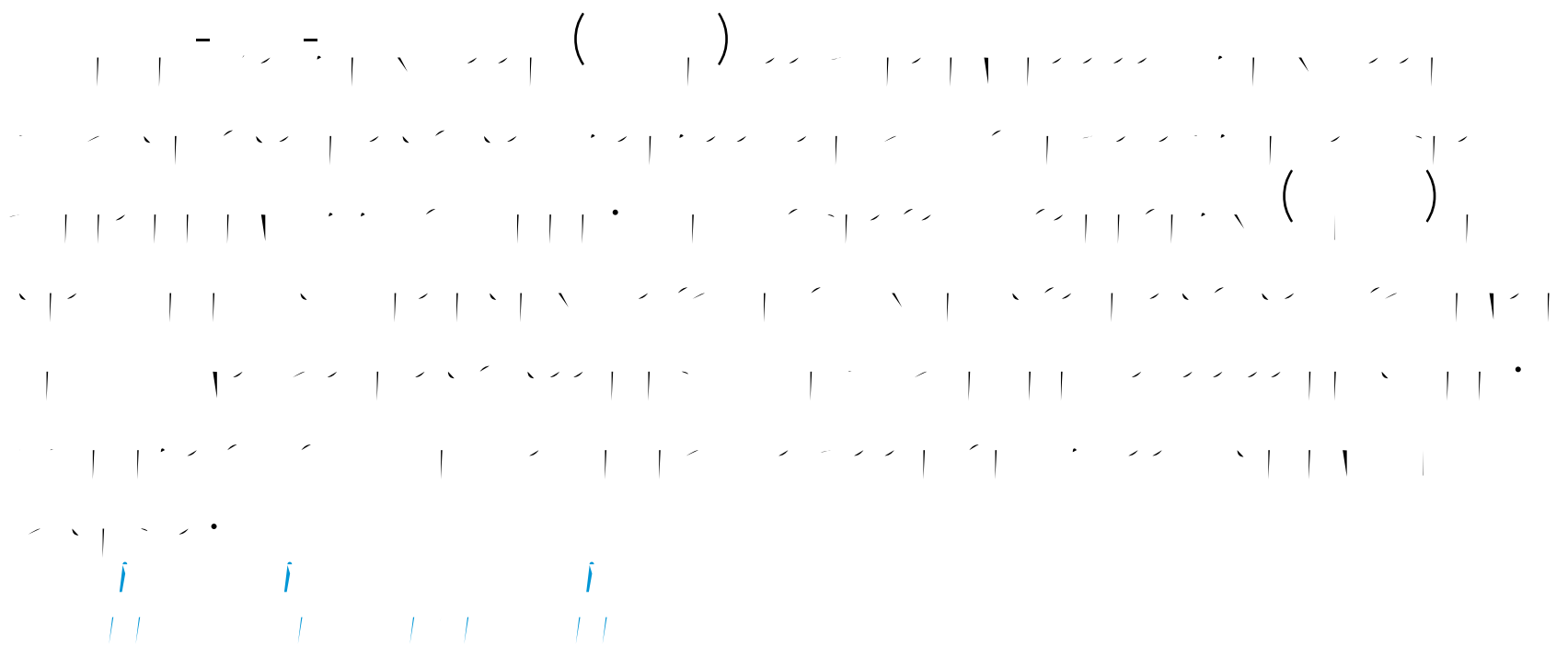
Abstract: This study examines the impact of prophylactic ceftriaxone on antimicrobial resistance in out-of-hospital cardiac arrest (OHCA) patients. The research focuses on the use of ceftriaxone as a prophylactic agent in OHCA patients, and its effect on the development of antimicrobial resistance. The study area is located in a large urban center, where OHCA is a leading cause of death. The research aims to understand how the use of ceftriaxone affects the development of antimicrobial resistance in OHCA patients, and how this in turn affects the overall health and resilience of the community. The study uses a combination of field observations and laboratory experiments to investigate the effects of ceftriaxone on antimicrobial resistance. The results of the study show that the use of prophylactic ceftriaxone in OHCA patients has a significant impact on the development of antimicrobial resistance. This is particularly true for the most sensitive species, which show a marked increase in antimicrobial resistance in patients who received prophylactic ceftriaxone. The study also found that the use of ceftriaxone has a significant impact on the overall health and resilience of the community. This is evident in the increased incidence of antimicrobial resistance in the community, as well as the increased costs of treating antimicrobial resistance. The study concludes that the use of prophylactic ceftriaxone in OHCA patients is a major contributor to the development of antimicrobial resistance. It is therefore essential to develop effective strategies to prevent and manage antimicrobial resistance in OHCA patients.





## 7. Visualizing Elastin-Like-Polymer Behavior with Atomic Force Microscopy

Ben Wheeler '24 | E B , .D., , .D.



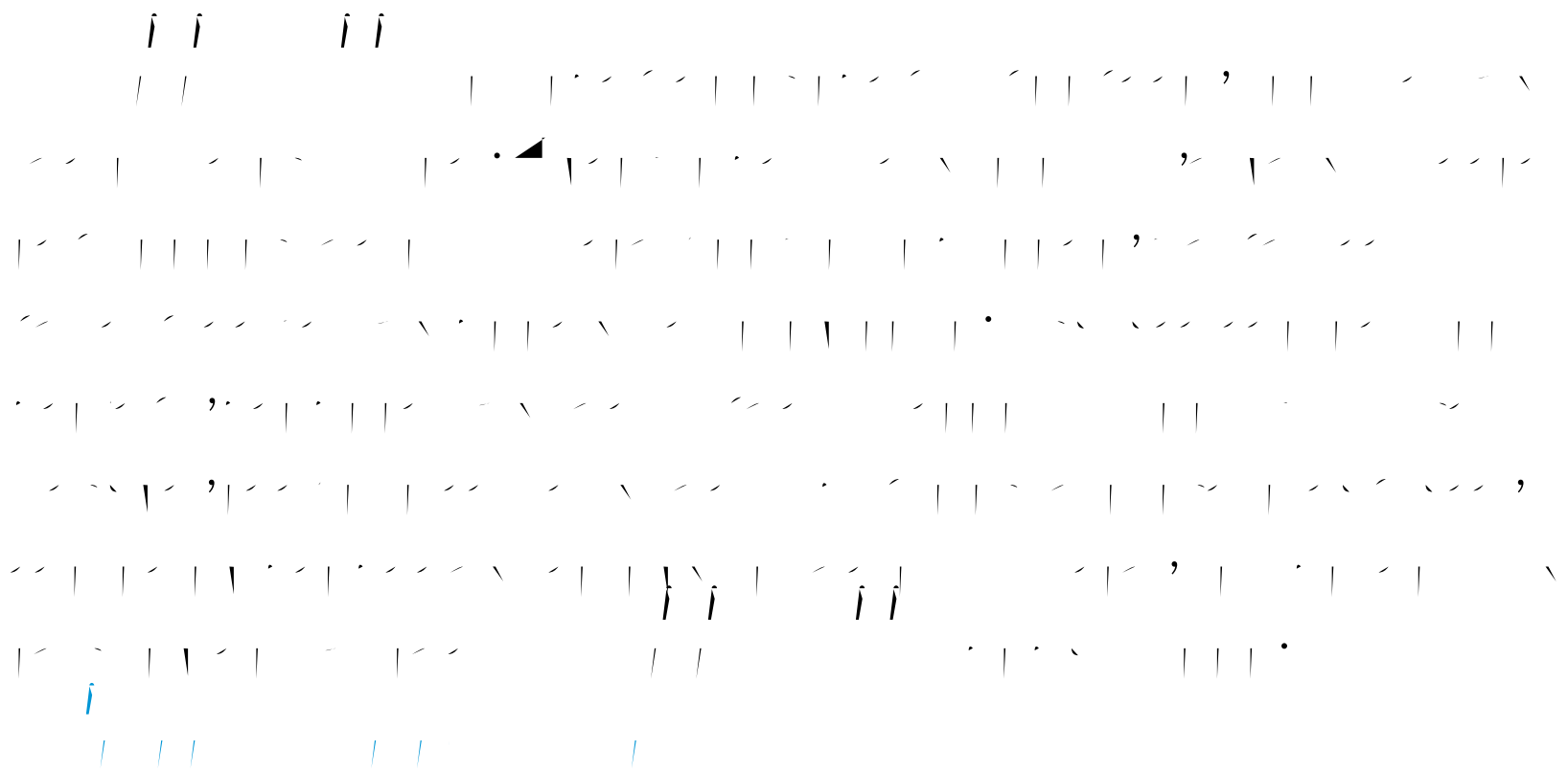
## 8. Effects of Early Life Pain on Amygdalar CRF Expression in Developing Rodents

Brooklynn Merrill '25, Megan Tomasch '25 |  
B , .D., , B. .



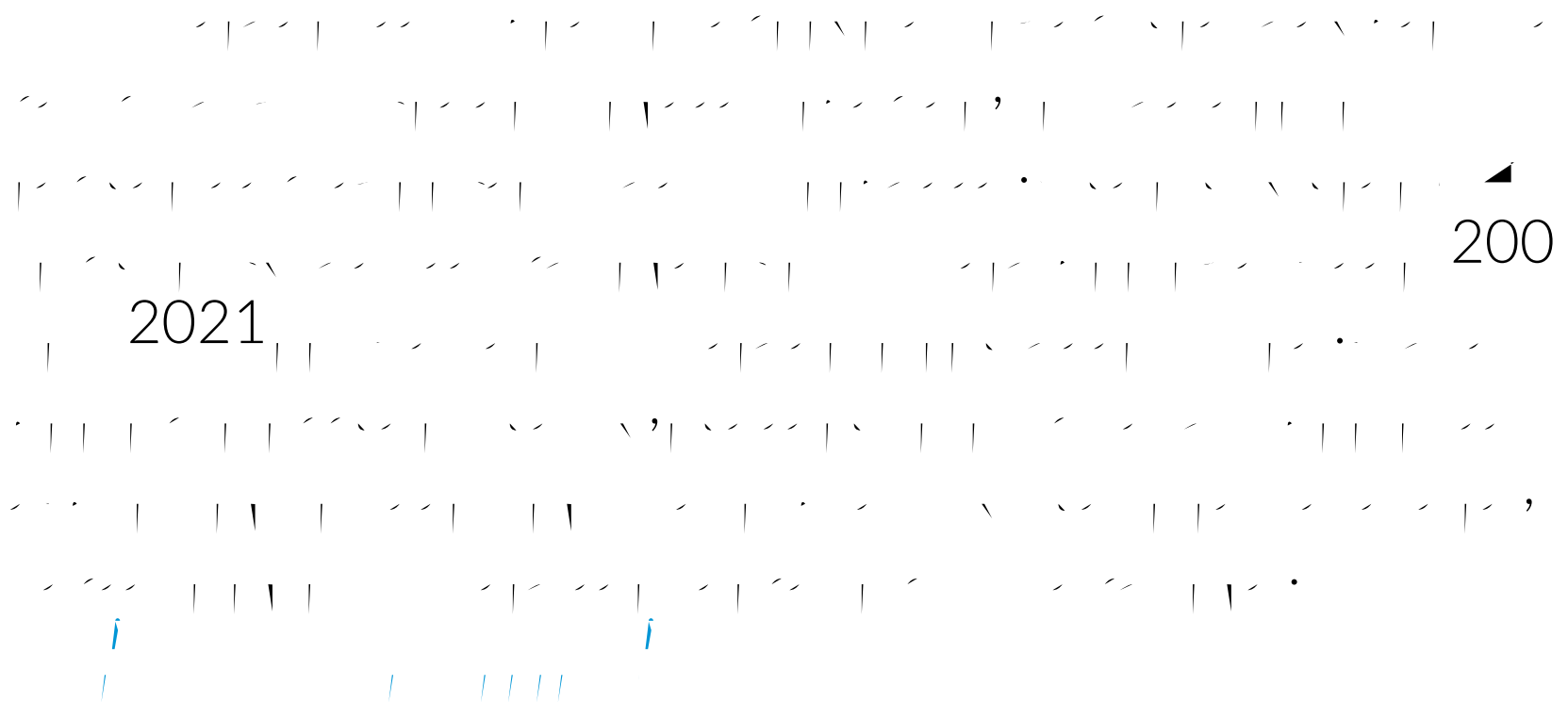
## 9. Establishing Pre-restoration Sites of *Agalinis maritima* on the Biddeford Pool Salt Marsh

Sam Walsh '24 | , .D.



## 10. The Growth of Mega Pool Systems in 12 Maine Salt Marshes From 2009 to 2021

Katelyn DeWater '25 | , .D.



## 11. Effect of Antimicrobial Peptides on Antibiotic-Mediated Killing of Bacterial Biofilms

Anjanadevi Govindaraj '24, Alya Theriault '24 |  
*B*, *.D.*

Abstract: Bacterial biofilms are a major cause of chronic infections and are resistant to antibiotics. Antimicrobial peptides (AMPs) have been shown to have antibacterial activity against biofilms. This study investigated the effect of AMPs on antibiotic-mediated killing of bacterial biofilms. The results showed that AMPs significantly enhanced the killing of bacterial biofilms by antibiotics. The mechanism of action of AMPs is thought to be the disruption of the biofilm matrix, which allows antibiotics to penetrate more effectively. This study provides evidence that AMPs can be used as adjuvants to improve the efficacy of antibiotics in the treatment of bacterial biofilms.

## 12. Thermal Tolerance and Temperature Thresholds in Jonah Crabs

Anna Sinclair '24 | *F*, *.D.*

Abstract: Jonah crabs (*Libinia emarginata*) are a species of crab found in the western Atlantic Ocean. They are known for their ability to tolerate a wide range of temperatures. This study investigated the thermal tolerance and temperature thresholds of Jonah crabs. The results showed that Jonah crabs have a thermal tolerance range of approximately 10°C to 30°C. The temperature threshold for survival was found to be approximately 5°C. This study provides information on the thermal tolerance and temperature thresholds of Jonah crabs, which is important for understanding their distribution and survival in their natural habitat.

### 13. Comparison of Bone Density in College Male and Female Ice Hockey Players Throughout a Season

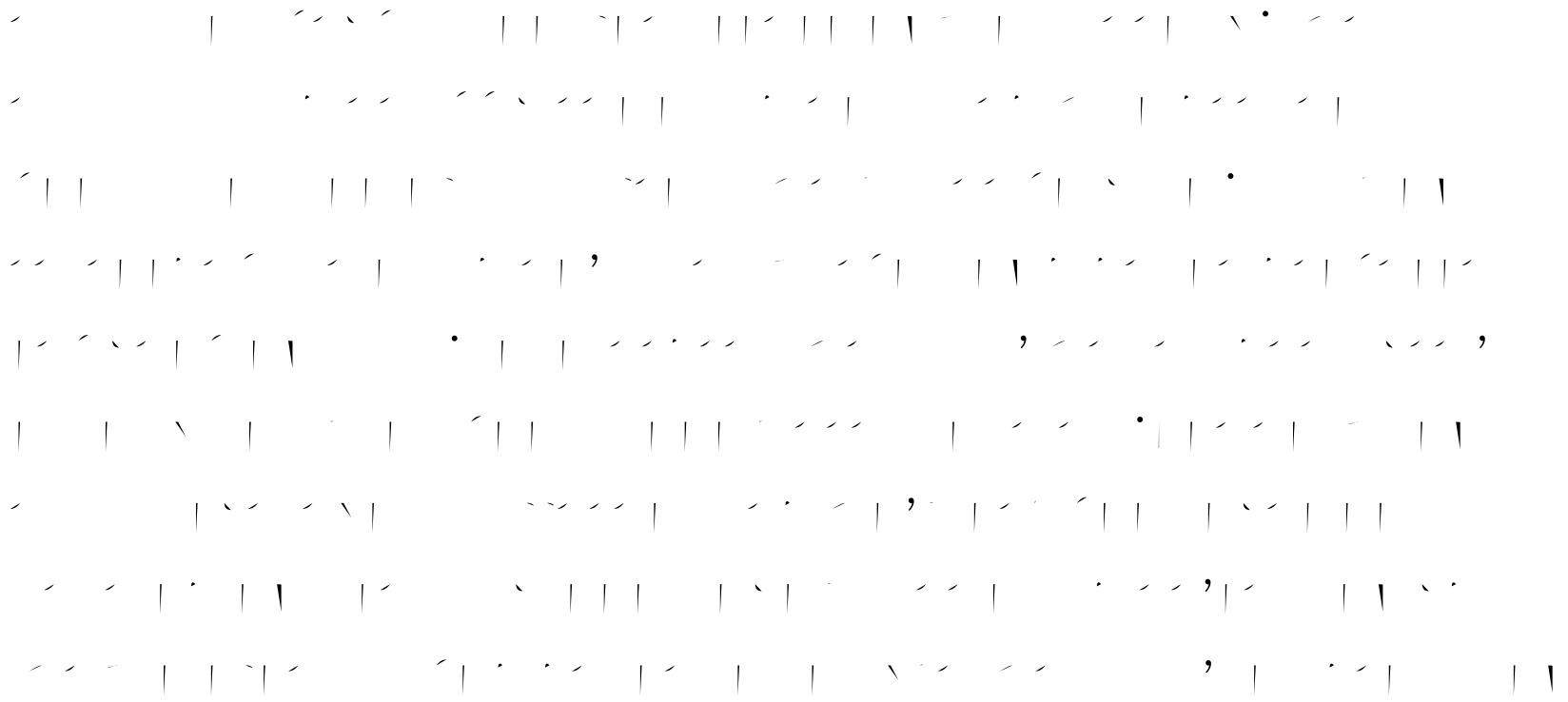
Sarah Collins '24 | [View Presentation](#), [Download](#), [Share](#)

Abstract: Bone density is a critical factor in determining the risk of injury, particularly in contact sports like ice hockey. This study compares the bone density of college male and female ice hockey players throughout a season. The study involved a longitudinal design with participants being measured at the beginning and end of the season. Data analysis showed that both male and female players experienced a decrease in bone density over the course of the season, with male players showing a more significant decline. These findings suggest that ice hockey may have a negative impact on bone density, which could increase the risk of injury. Further research is needed to explore the underlying mechanisms and potential interventions to mitigate these effects.

### 14. Postural Effects on Power

## 15. Using eDNA as a Tool to Monitor Biodiversity

Josephine Pikowski '26 | *E* . , . ., *C*  
 , .*D.*, *B* , *F* , .*D.*





## 19. Assessing the Efficiency of a Microprocessor-based Bycatch Reduction Device on the Atlantic Spiny Dogfish (*Squalus acanthias*) in Recreational Fisheries

Clayton Nyiri '25 | *G*, *.D.*, *B*, *.D.*, *D*, *.D.*, *B*, *D*, *.D.*

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## 23. Microplastic Contamination and Tissue Distribution in Atlantic Sea Scallops

Amber-Rae Pesek '24 | B.S., M.S., Ph.D.

Abstract: Microplastic contamination in Atlantic sea scallops (*Argopecten irradians*) has been extensively studied, with findings indicating the presence of microplastics in various tissues, including the digestive tract, muscle, and gonads. This study aims to investigate the tissue distribution and potential effects of microplastics in Atlantic sea scallops. The research involves the collection and analysis of scallops from various locations, followed by the identification and quantification of microplastics in different tissues. The results show that microplastics are present in all tissues analyzed, with the highest concentrations found in the digestive tract. The study also examines the potential effects of microplastics on scallop health, including changes in growth, reproduction, and survival. The findings suggest that microplastic contamination is a significant concern for the scallop industry and the environment, and further research is needed to understand the long-term effects of microplastics on marine organisms.

## 24. Antimicrobial Compounds in Reproductive Parts of the Seaweed *Fucus vesiculosus* and Their Effectiveness Against Human Pathogens

Claire Dyer '26 | B.S., M.S., Ph.D.

Abstract: The seaweed *Fucus vesiculosus* is a rich source of natural antimicrobial compounds. This study focuses on the identification and characterization of antimicrobial compounds in the reproductive parts of *Fucus vesiculosus* and their effectiveness against human pathogens. The research involves the extraction and purification of compounds from the reproductive parts of the seaweed, followed by their testing against a range of human pathogens. The results show that the reproductive parts of *Fucus vesiculosus* contain several antimicrobial compounds, including polyphenols, terpenoids, and alkaloids. These compounds exhibit strong antimicrobial activity against various human pathogens, including bacteria, fungi, and viruses. The study also examines the potential mechanisms of action of these compounds and their potential applications in the development of natural antimicrobial agents. The findings suggest that the reproductive parts of *Fucus vesiculosus* are a promising source of natural antimicrobial compounds for the treatment of human infections.

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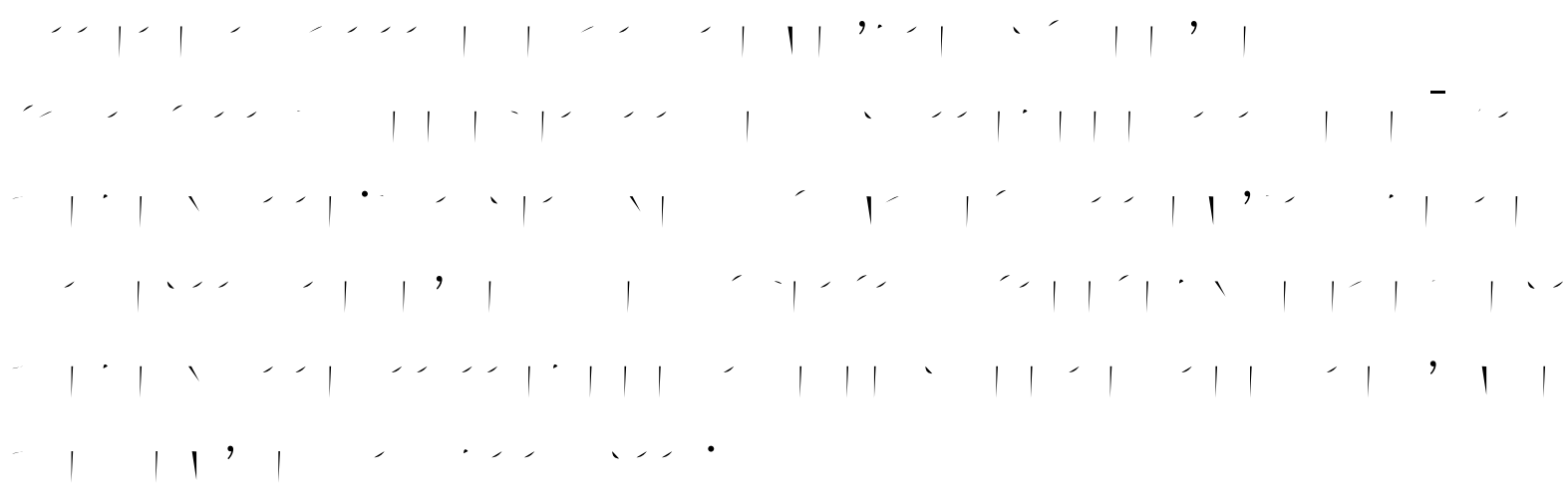
## 25. Observing Mitochondrial Dysfunction in *Saccharomyces cerevisiae*

Abigail Blouch '24 | G , .D.



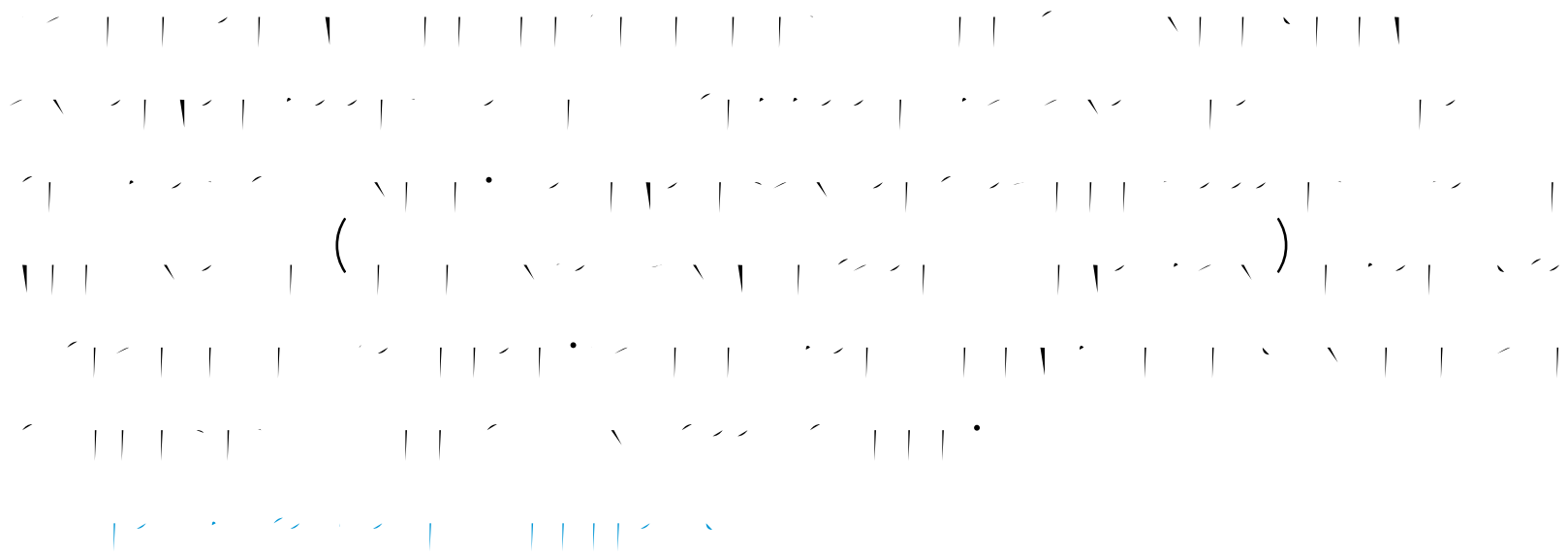
## 26. Phase Behavior of Multi-Stimuli Responsive Biopolymers

Peter Swanson '24, Ben Wheeler '24 | E B , .D.



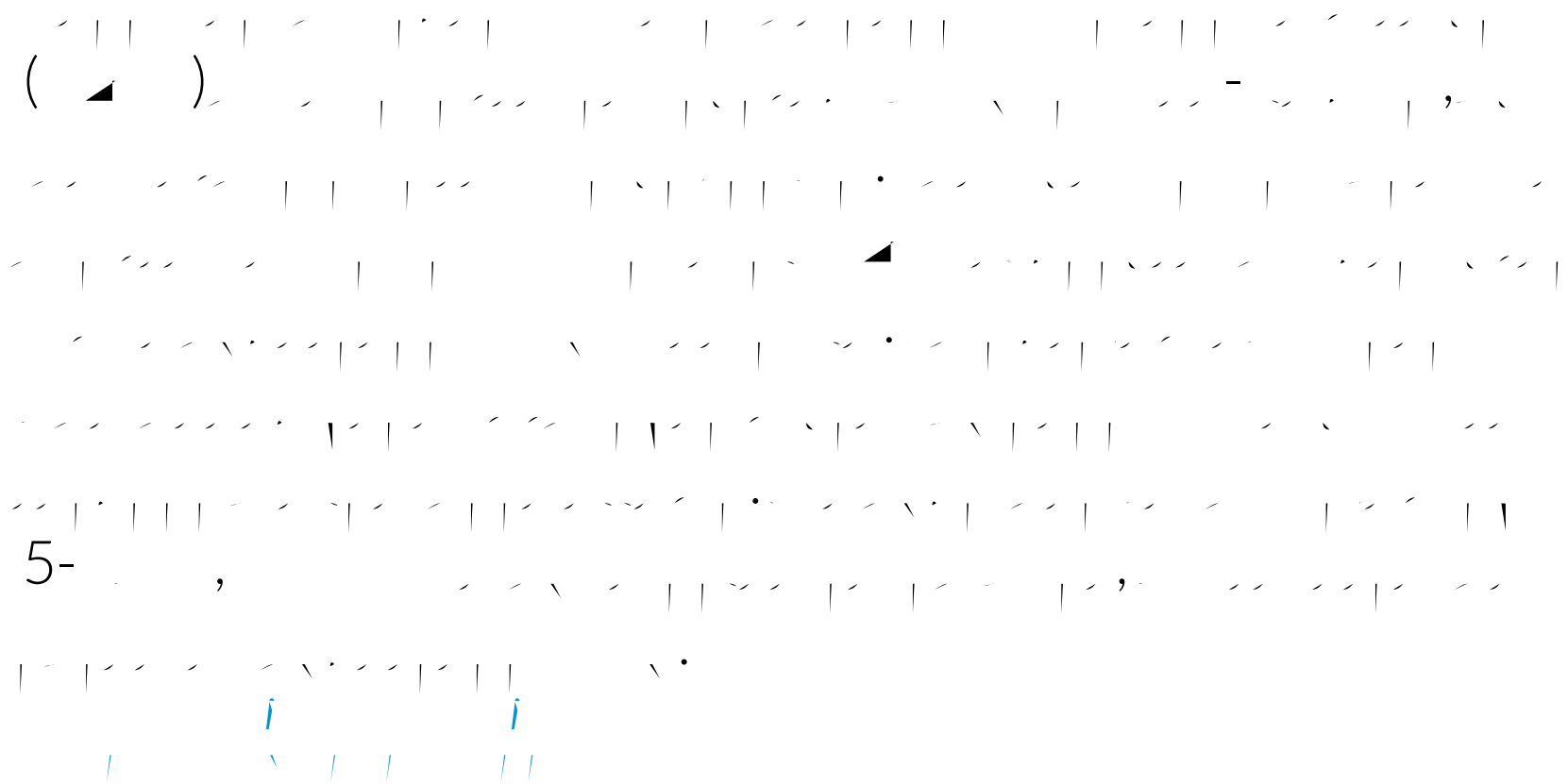
## 27. Oxidation Reactions with Dicopper Catalysts in Hydrogen Peroxide Solution

Will DeFroschia '24 | *F*, *.D.*



## 28. Epigenetic Changes in DNA Methylation are Involved in the Lasting changes in Pain Sensitivity Following Neonatal Intensive Care Unit (NICU)-like Treatment in Rats

Aidan J.G. Fox '24, Emma Naess '24, Megan Tomasch '25 | *B*, *.D.*, *B.*





Name

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## THANK YOU

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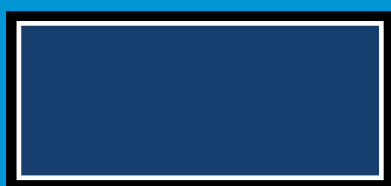
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