Biological exploration of deep-sea hydrocarbon seeps

Mentor(s)
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Abstract
Hydrocarbon seeps are vibrant deep-sea ecosystems that play a critical role in the globalmethane cycle. These habitats support commercially valuable marine species and intersect withindustrial activities such as gas and oil extraction, as well as potential offshore wind developmentlocations. In U.S. waters, including off the coast of Rhode Island, hydrocarbon seeps are widespreadand ecologically significant. Through a collaboration with the Florida Institute of Oceanography's Peerside program, a student will join the Beinart Lab to gain expertise in: 1) Planning andparticipating in deep-sea research operations using advanced ocean exploration technologies, such asremotely operated vehicles (ROVs) and 2) Assessing deep-sea biodiversity using genetic andmorphological methods. As part of this project, the student will take part in a six-day deep-searesearch expedition to hydrocarbon seeps in the Gulf of Mexico. They will collect biologicalspecimens, including animals and microbiota, and use genetic barcoding and/or morphologicaltechniques to identify deep-sea organisms. Additionally, the student will develop inclusive sciencecommunication skills by contributing to the development of a free, publicly accessible digitaltextbook on deep-sea biology. This resource is being collaboratively created by Professor Beinart, theUniversity of Rhode Island's Inner Space Center, and marine scientist experts from around thecountry.

Project Objectives

1. Plan and participate in deep-sea operations using advanced ocean exploration technology(remotely operated vehicles)

2. Assess deep-sea biodiversity through genetic and other methods

3. Contribute materials to a free, publicly accessible digital textbook on deep-sea biology