

COBRA Opportunities for Connecting Early-Career Deep-Sea Professionals with Opportunities for Training and Networking

Julie Huber

COBRA Director

Woods Hole Oceanographic Institution



Photo: Ocean Exploration Trust | NOAA



LinkedIn

cobra.bigelow.org



What is COBRA ?

Accelerating Research of the Deep Sea to Inform Decision Making

COBRA is an **international network-of-networks** with a mission to accelerate research of the crustal ocean biosphere to inform decision making while training the next generation



**Sign up for our
monthly newsletter!**

**Geoff
Wheat**

**Andy
Fisher**

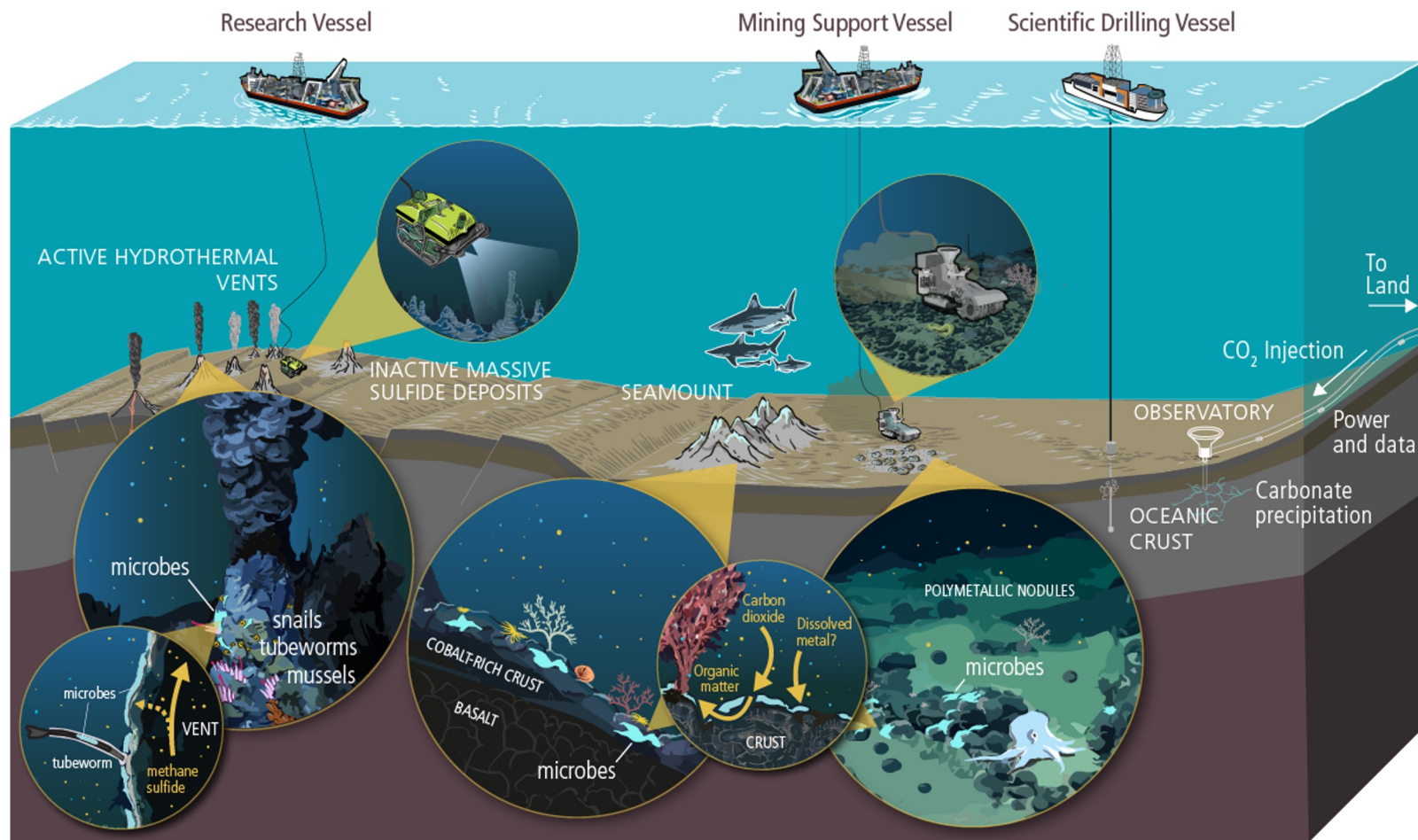
**Randi
Rotjan**

**Beth
Orcutt**

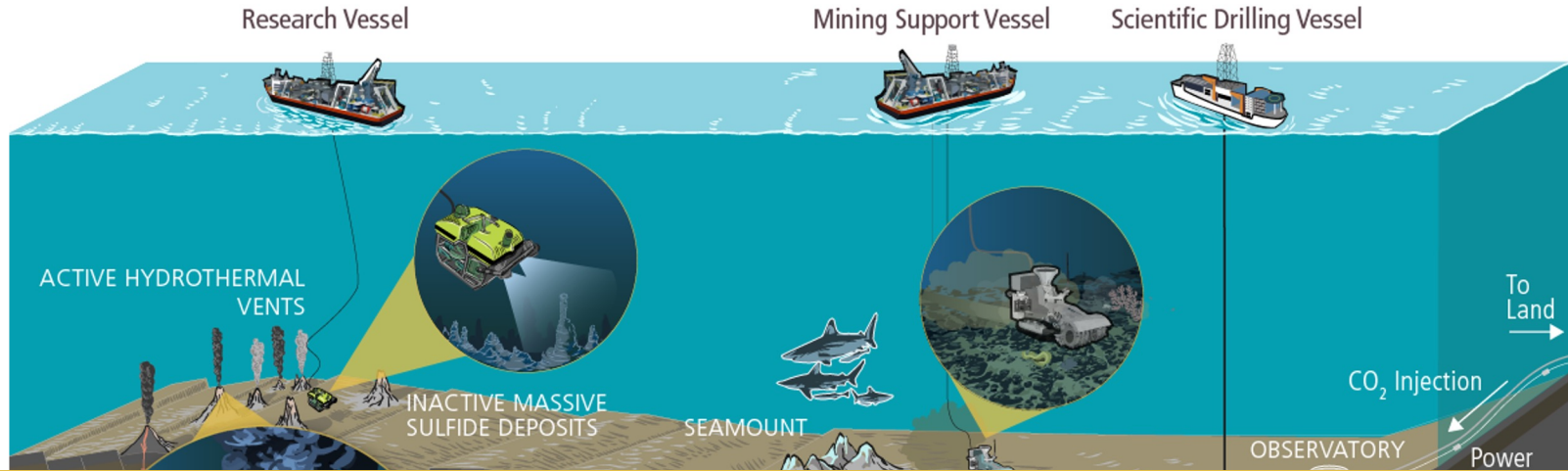
**Rosalynn
Sylvan**



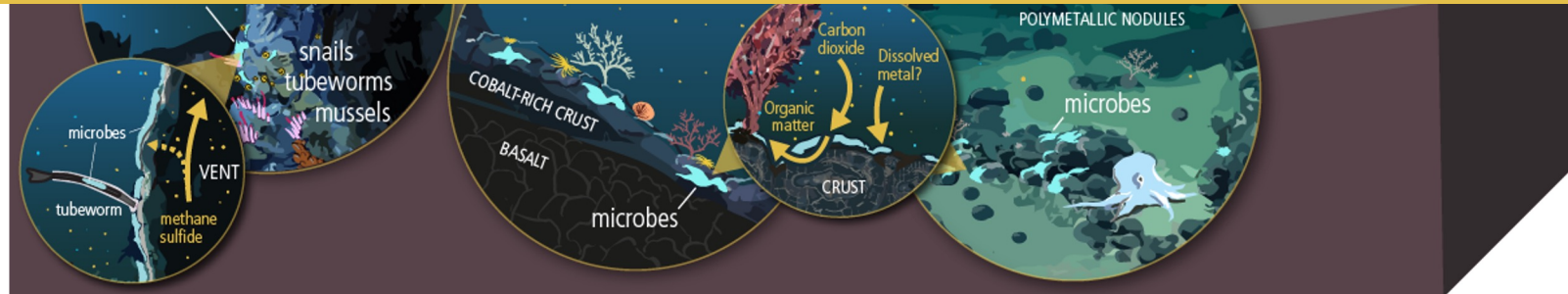
The Crustal Ocean Biosphere and Emerging Human Activities in the Deep Sea



The Crustal Ocean Biosphere and Emerging Human Activities in the Deep Sea



We need more eyes on the seafloor!



COBRA Partners

COBRA
CRUSTAL OCEAN BIOSPHERE
RESEARCH ACCELERATOR



Center for Research, Excellence, and Diversity in
TEAMSCIENCE



cobra.bigelow.org

Opportunities for ECOPs

ACTIVITIES

CO-ORDINATION

Catalyze collaborations

ACCELERATION

Fill knowledge gaps

TRANSLATION

Bringing findings to policy makers, industry, & the public

EDUCATION

Training next generation in deep-sea expedition leadership

Train the next generation of ocean exploration, science, and policy leaders

- Training in expedition leadership
- Recruit ECOPs into leadership positions
- Webinars (1st Tuesdays) and workshops
- Open access training materials
- **Accelerator award for research exchanges and other training activities**

COBRA Early Career Accelerator Award

For ECOPs to gain new skills and experiences that can be applied to COBRA themes to result in a more well-connected community and development of future COBRA researchers and leaders



Rolling Call!



COBRA Early Career Accelerator Award

For ECOPs to gain new skills and experiences that can be applied to COBRA themes to result in a more well-connected community and development of future COBRA researchers and leaders

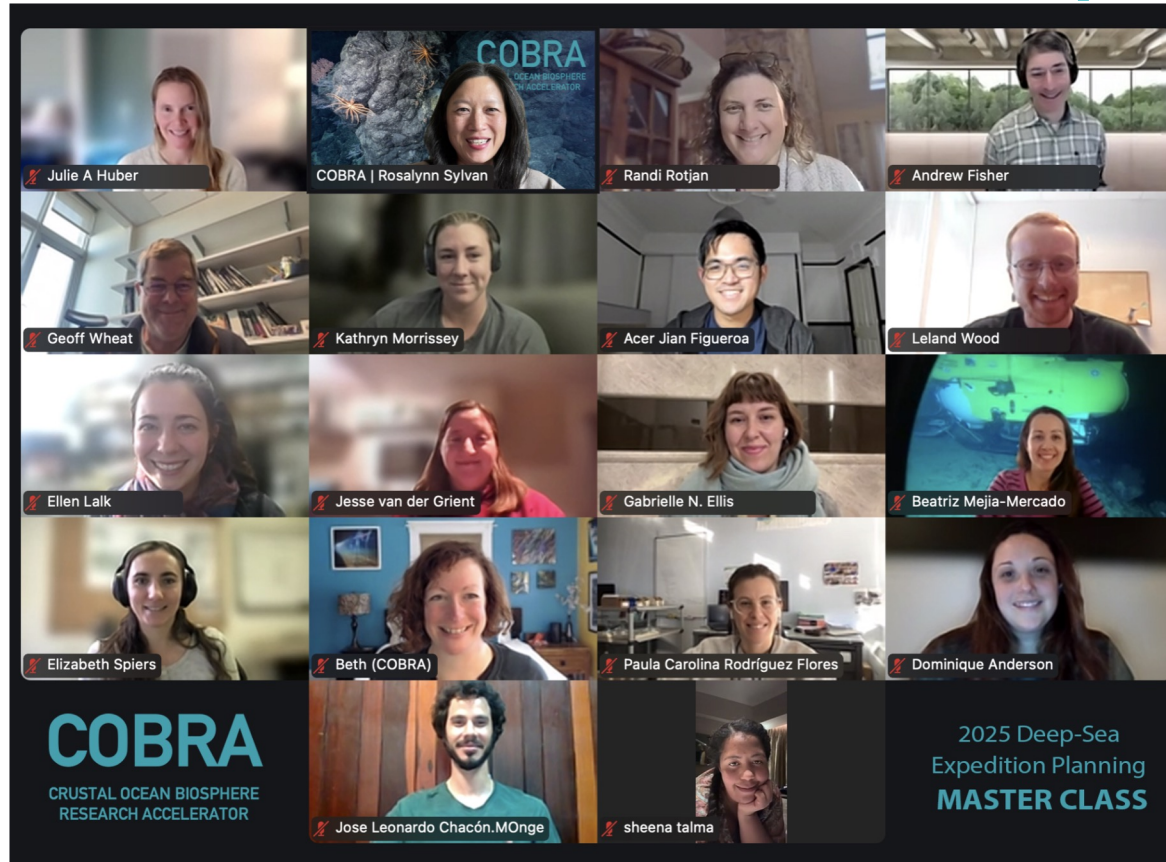
Accelerator awards of US\$2,500 are available for training opportunities tied to a US-based organization or activity;
via stipend costs for participants based at US institutions or eligible travel costs for participants based at non-US institutions



Rolling Call!



Early Career Deep-Sea Expedition Leadership Master Class and Fellowship




What is the COBRA Master Class?

GOAL

to empower early career ocean professionals*
with the **skills and tools** to successfully
design, propose, and execute
collaborative deep-sea oceanographic research that
informs policy making

*ECOP = senior graduate students, postdocs, junior faculty & professionals



What do I need to
know to be the
Chief Scientist ??

COBRA = we want to demystify this !!

What is the COBRA Master Class?

GOAL

By the end of the course, you feel prepared to write expedition proposals and lead a deep-sea expedition !!!

What is the COBRA Master Class?

HOW

12 week (mostly) **virtual training program***
(2 hour weekly meeting + study)
where participants learn from
diverse global experts
how to plan and run an inclusive expedition
from start to finish

The 2026 COBRA Master Class

- >100 applicants every year; 12 participants selected from a qualified pool
- 5 instructors (COBRA Cols) + some guests
- Use Slack & Class notes for organization + asynchronous communication
 - Usually pre-class activities (videos, articles, etc.)
 - Lectures & breakouts in class activities (live on Zoom, 2 hrs/week)

The 2026 COBRA Master Class

- >100 applicants every year; 12 participants selected from a qualified pool
- 5 instructors (COBRA Cols) + some guests
- Use Slack & Class notes for organization + asynchronous communication
 - Usually pre-class activities (videos, articles, etc.)
 - Lectures & breakouts in class activities (live on Zoom, 2 hrs/week)
- Participants work on a “Dream Cruise” project throughout the course, building on the topics covered
- Participants are named “COBRA Fellows” which enables other leadership opportunities

COBRA 2026 Master Class Topics

Week - Topic
Week 1 - Knowing What Ships & Assets are Available
Week 2 - Understanding Team Science
Week 3 - Finding Funding & Writing Proposals
Week 4 - Planning the Cruise & Permitting
Week 5 - Respectful Concept Development
Week 6 - Managing Operations at Sea
<i>OCEAN SCIENCES MEETING</i>

COBRA 2026 Master Class Topics

Week - Topic
Week 1 - Knowing What Ships & Assets are Available
Week 2 - Understanding Team Science
Week 3 - Finding Funding & Writing Proposals
Week 4 - Planning the Cruise & Permitting
Week 5 - Respectful Concept Development
Week 6 - Managing Operations at Sea
<i>OCEAN SCIENCES MEETING</i>
<i>Week 7 - Dream Cruise Check-in</i>
Week 8 - Data Introduction
Week 9 – DMP to Cruise Report
Week 10 – Outreach & Unwritten Rules
Week 11 – Ocean Law & Policy
Week 12/13 – At Bigelow: Wrap Up & Dream Cruise Presentations!

COBRA Master Class Topics

Week 5: At-Sea Operations

Class Plan & Materials

- Hour 1
 - 10 min: All Group Q&A discussion: What was something new that you learned from watching the videos?
 - 30 min: Lecture Part 1: Mobilization, Planning, & Dives
 - 5 min: All Group Activity - review Jason Virtual Van
 - 10 min: Q&A on part 1 topics
 - 5 min: Break
- Hour 2
 - 30 min: Lecture Part 2: Reports, Demobilization, Contingencies, & Morale
 - 25 min: Open discussion/Q&A
 - 5 min: Wrap up, prep for next week

Additional Resources



Example Cruise
Report_Wheat_AT26-09.pdf

1
MB



Master Class “Dream Cruise” !

Title of Project

Big Picture Statement of the Problem

What do you want to do? Where (region/ocean basin)? And why is it important?

Objectives:

1. Objective 1 [Develop further in Week 3]
2. Objective 2 [Develop further in Week 5]
3. Objective 3 [Develop further in Week 7]

What type of assets are required?

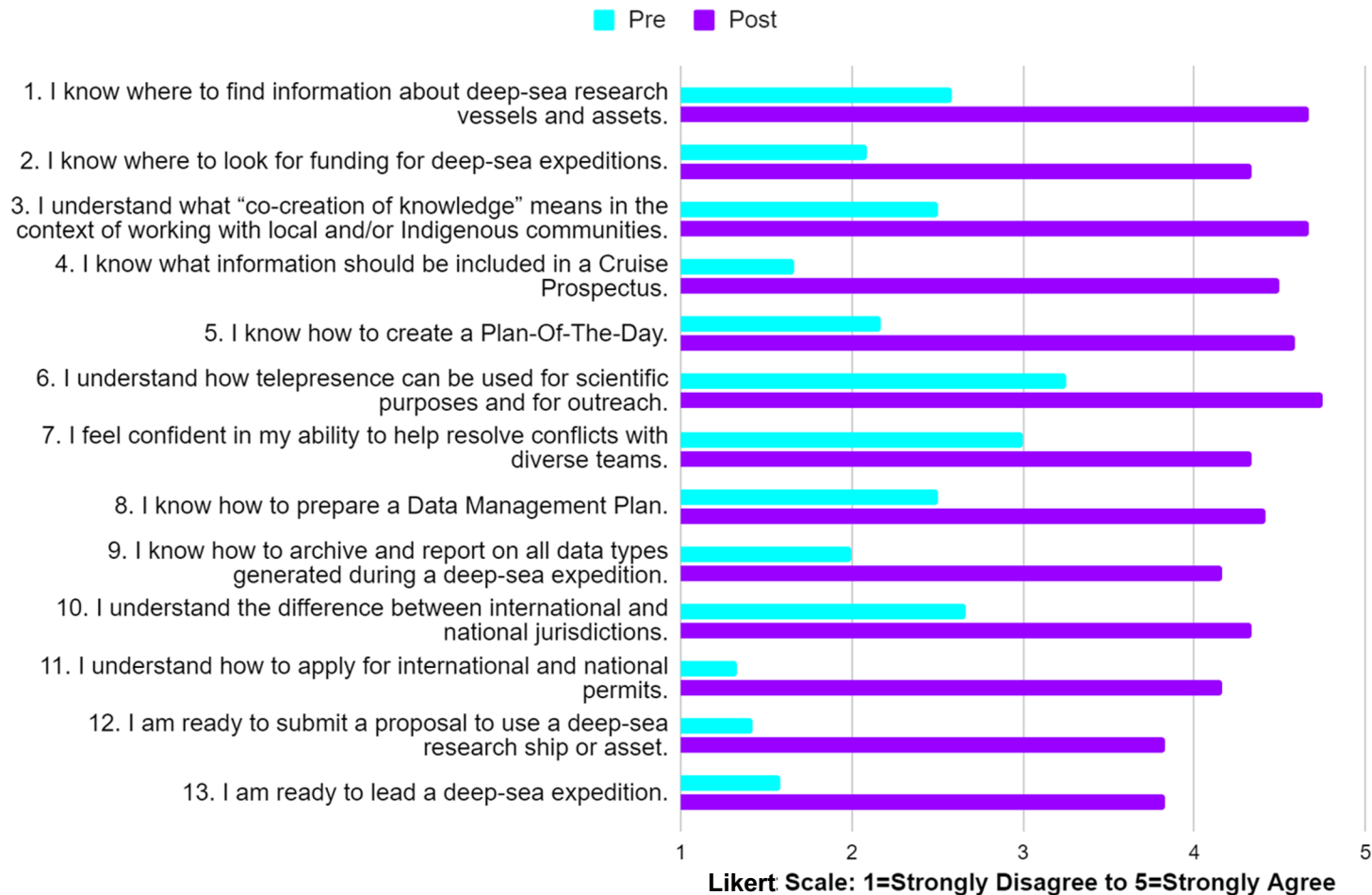
Ship (coastal, regional, global class)? Deep submergence vehicles (submersible, ROV, AUV)? CTD? Coring? Other tools (camera, etc.)?

Who do you need on your team?

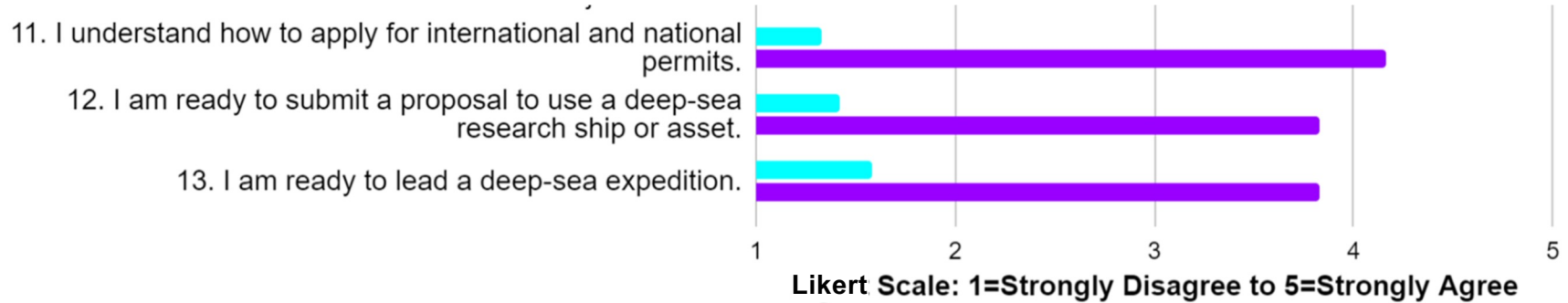
List the kinds of people you need on your team: biologists? chemists? engineers? Do you need people with specific expertise? Do you want space for interns/trainees? Do you need scientists ashore to participate? Considering the area you want to conduct your research, does your team include researchers from that nation/region?



Pre- & Post-Class Assessments



Pre- & Post-Class Assessments



Big shifts in the confidence of participants to be expedition leaders

COMMUNITY CASE STUDY article

Front. Mar. Sci., 06 October 2023

Sec. Ocean Observation

Volume 10 - 2023 | <https://doi.org/10.3389/fmars.2023.1223197>

This article is part of the Research Topic

Advances in Ocean Exploration

[View all 9 Articles](#)

COBRA Master Class: Providing deep-sea expedition leadership training to accelerate early career advancement

Randi D. Rotjan^{1*}Katherine L. C. Bell^{2*}Julie A. Huber³Charles Geoffrey Wheat⁴Andrew T. Fisher⁵Rosalynn Lee Sylvan⁶James McManus⁶Katharine T. Bigham^{7,8}Sergio Cambronero-Solano^{9,10}

Tristan

Savannah Goode^{7,8}Juliana Leonard¹²Sheryl Murdock¹³Fabiana S. Paula¹⁴Leandro Ponsoni¹⁵Adela Roa-Varón¹⁶Sarah Seabrook⁸Russell Shomberg¹⁷Loïc Van Audenhaege¹⁸⁺Beth N. Orcutt⁶¹ Department of Biology, Boston University, Boston, MA, United States² Ocean Discovery League, Saunderson, RI, United States³ Department of Marine Chemistry and Geochemistry, Woods Hole Oceanographic Institution, Woods Hole, MA, United States⁴ College of Fisheries and Ocean Sciences, University of Alaska Fairbanks, Fairbanks, AK, United States⁵ Department of Earth and Planetary Sciences, University of California, Santa Cruz, Santa Cruz, CA, United States⁶ Bigelow Laboratory for Ocean Sciences, East Boothbay, ME, United States⁷ School of Biological Sciences, Victoria University of Wellington, Wellington, New Zealand⁸ National Institute of Water and Atmospheric Research, Wellington, New Zealand⁹ Department of Physics, Universidad Nacional, Heredia, Costa Rica¹⁰ Research and Development Department, Colectivo Internacional Pelagos Okeanos, San José, Costa Rica¹¹ NORCE Norwegian Research Centre, Bergen, Norway¹² Department of Microbial Ecology, University of Vienna, Wien, Austria¹³ Bermuda Institute of Ocean Sciences, St. George's, Bermuda¹⁴ Department of Biological Oceanography, University of São Paulo, São Paulo, Brazil¹⁵ Marine Robotics Centre, Flanders Marine Institute, Ostend, Belgium¹⁶ National Museum of Natural History, Smithsonian Institution, Washington, DC, United States¹⁷ Department of Ocean Engineering, University of Rhode Island, Narragansett, RI, United States¹⁸ Univ Brest, Centre national de la recherche scientifique (CNRS), Ifremer, UMR6197, Biologie et Ecologie des Ecosystèmes marins Profonds (BEEP), Plouzané, France

Manual- Coming Soon!

Operationalizing deep-sea expedition leadership: A COBRA manual for aspiring chief scientists

Rotjan, R.D., R. Sylvan, J. Weston, R. Shomberg, K.A. Barnhill, L. Van Audenhaege, K. Croff-Bell, A. Fisher, G. Wheat, B. Orcutt, and J. Huber. *With contributions from COBRA Fellows Classes of 2022-24.*

Table of Contents|

Prelude

How To Use This Manual

Table of Contents

Chapter 1 - Welcome Aboard

Introduction to Deep-Sea Research Expeditions

Phases of an Expedition

Key Personnel Afloat

Roles and Responsibilities of a Chief Scientist

Conclusion

Chapter 2 - Deep-Sea Research Vehicles, Samplers, and Sensors

Oceanographic Research Ships

Traditional Oceanographic Tools

Engineering & Structural Considerations

Deep Sea Robotic Platforms and Vehicles

Sensor Systems

Sampling Systems

Conclusion

Chapter 3 - Proposals & Funding

Funding Agencies

Writing Research Proposals

Proposal Evaluation

Respectful Concept Development

Scheduling Ship Time

Chapter 4 - Pre-Expedition Planning

Assembling the Expedition Team

Scientific Planning and Preparation

Expedition Planning Documents

Administrative Preparation

Logistics Planning

Conclusion

Chapter 5 - At-Sea Operations

Mobilization & Embarkation

Daily Operations

Life at Sea Off Watch

Demobilization & Disembarkation

General Tips for Expedition Success

Conclusion

Chapter 6 - Post-Expedition Follow-Up

Post-Expedition Administration

Post-Expedition Logistics

Expedition Report

Research Papers

Conclusion

Chapter 7 - Data Management

Initial Data Discovery

Creating Maps for Planning and Proposals

Data Repositories for Planning Expeditions

Physical Sample Repositories

Digital Storage Mediums

Organizing Files and Naming

Managing Videos, Photos, Screenshots

Log Entries and Sample Names

Conclusion

COBRA Master Class Materials

Protected: 2025 Master Class Week 4: Cruise Preparation



2025 MASTER CLASS OVERVIEW

Last Week | 4 February 2025 | Next Week

Overview

Being a chief/lead scientist is a big responsibility, but it is made easier by planning ahead and breaking up tasks and deadlines into smaller and

- Archive of 2025 Master Class weekly training materials available
 - Overview
 - Goals
 - Pre-Class Activities
 - Class Plan
 - Additional Resources
 - Class Slides
 - Post-Class Dream Cruise Project Development
- Email cobra@bigelow.org to request access to the password-protected site

Class Slides

