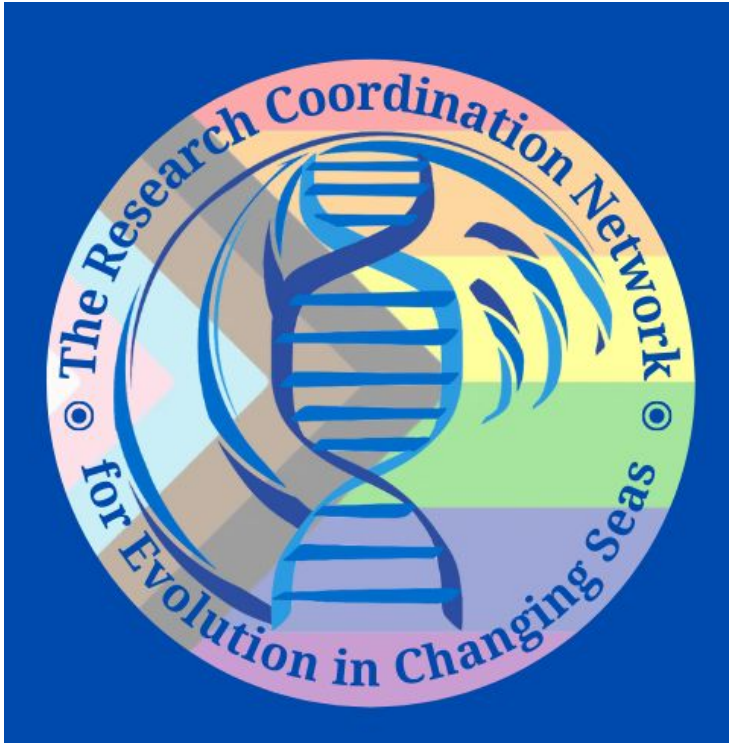
# The Research Coordination Network for Evolution in Changing Seas

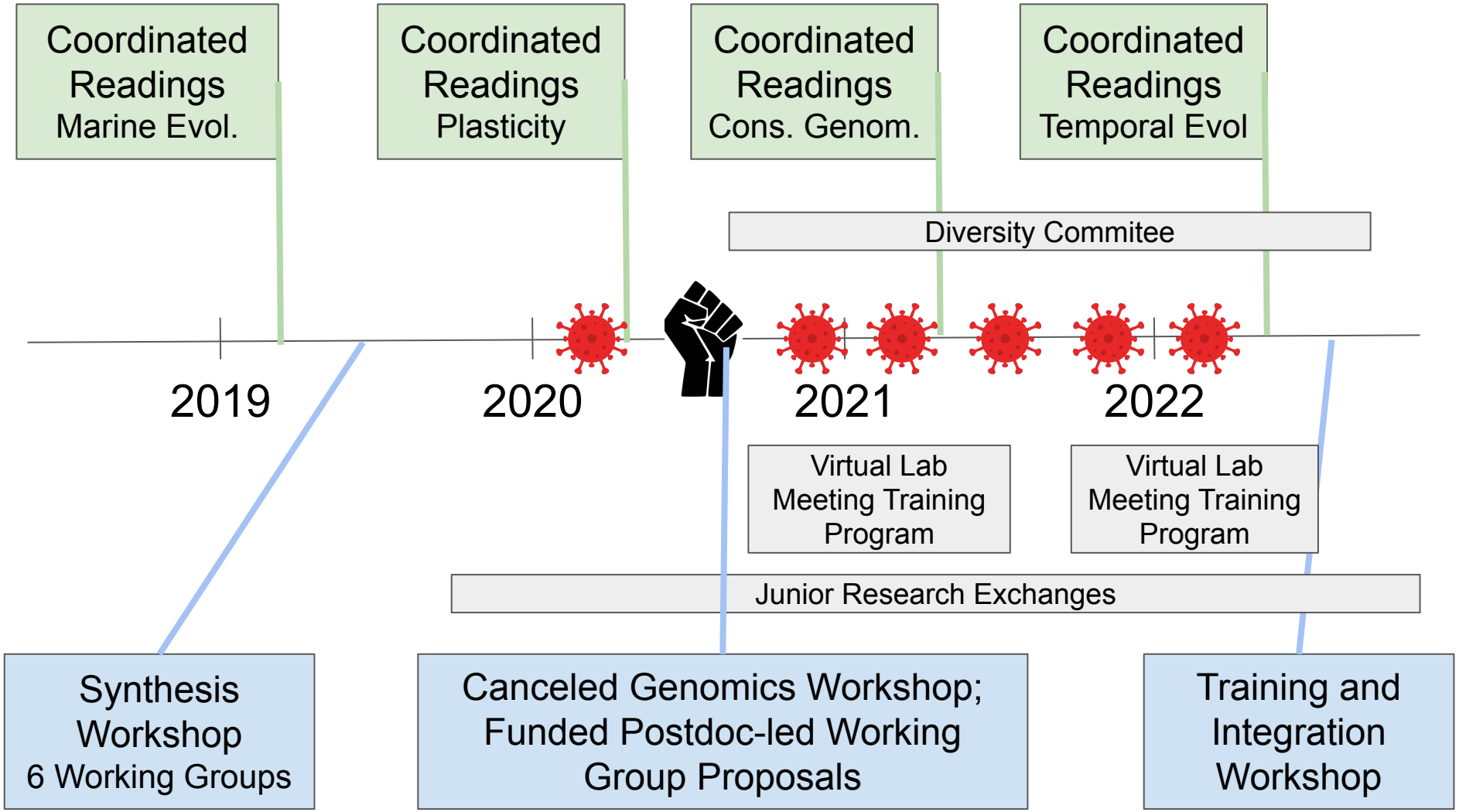
Compiled by Katie Lotterhos
Northeastern University




National Association of
Marine Labs October 2023

# Goals of Research Coordination Networks

- Advance a field or create new directions in research or education by supporting groups of investigators to communicate and coordinate their research, training, and educational activities
- Provide opportunities to foster new collaborations, including international partnerships, and address interdisciplinary topics.
- Innovative ideas for training, broadening participation, and development of community standards for data and meta-data are especially encouraged


Coordinated Readings Marine Evol.
Coordinated Readings Plasticity
Coordinated Readings Cons. Genom.
Coordinated Readings Temporal Evol
Diversity Commitee
2019
2020
2021
2022
Virtual Lab Meeting Training Program
Virtual Lab Meeting Training Program
Junior Research Exchanges
Synthesis Workshop 6 Working Groups
Canceled Genomics Workshop; Funded Postdoc-led Working Group Proposals
Training and Integration Workshop

# Goals of Research Coordination Networks

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| **Initiative** | **# of new collaborations** |
|---|---|
| Working Groups | ~100 |
| Professional development exchanges | ~21 |

| **Initiative** | **Training and Education** |
|---|---|
| Working Groups | 3 new websites |
| Coordinated Readings | Dozens of participants each year |
| Virtual Lab Meeting Training Program | ~ 80 junior academics trained |

# How the network started

Reviewer: “An odd and inappropriate group”

# How the network started

Katie Lotterhos (PI)

Dan Bolnick

Morgan Kelly

Joanna Kelley

Geoff Trussell

Randall Hughes

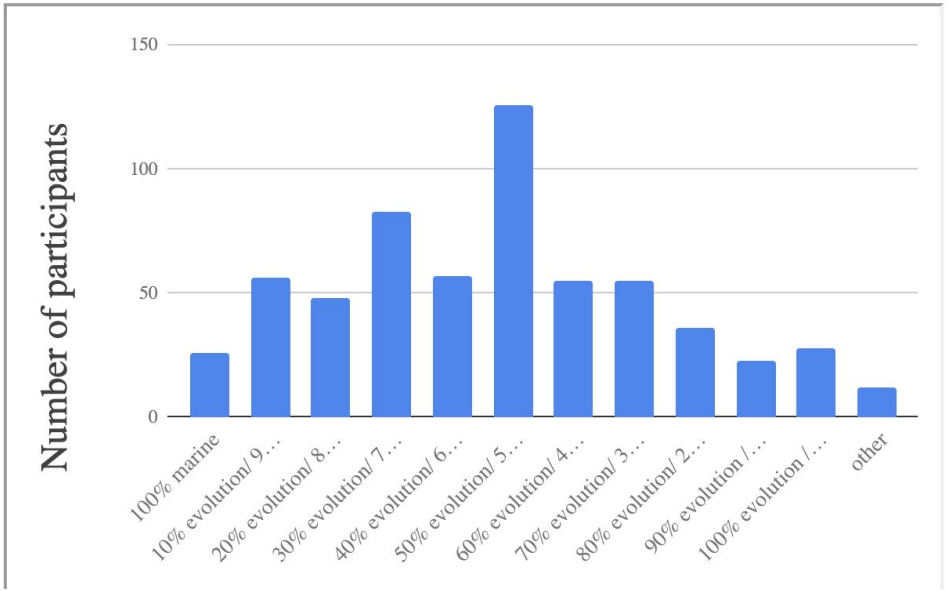
The decision to be an open, inclusive network

~600 members

75% USA

[Membership webpage]

**Self-characterization of our participants as how their research program or interests are divided between marine and evolutionary biology:**

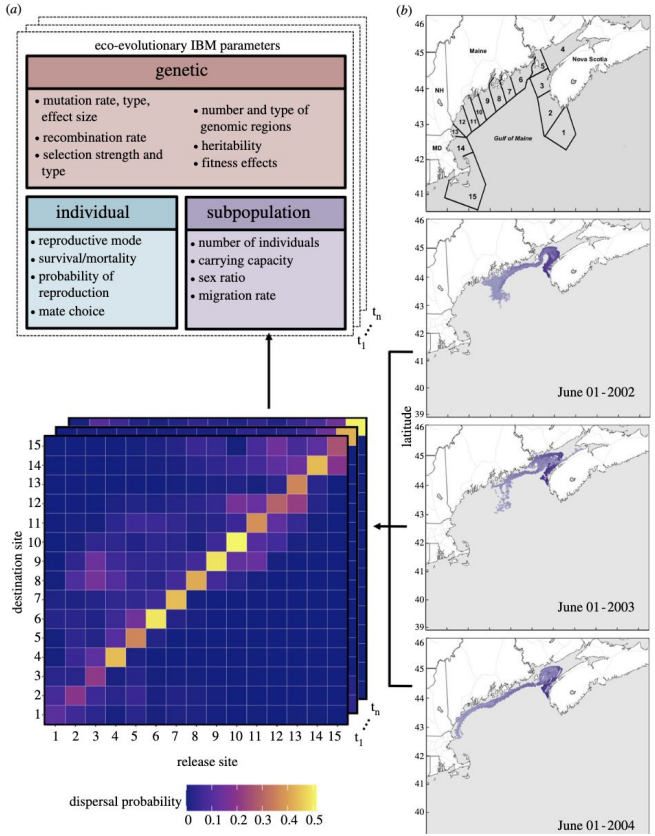


# Research

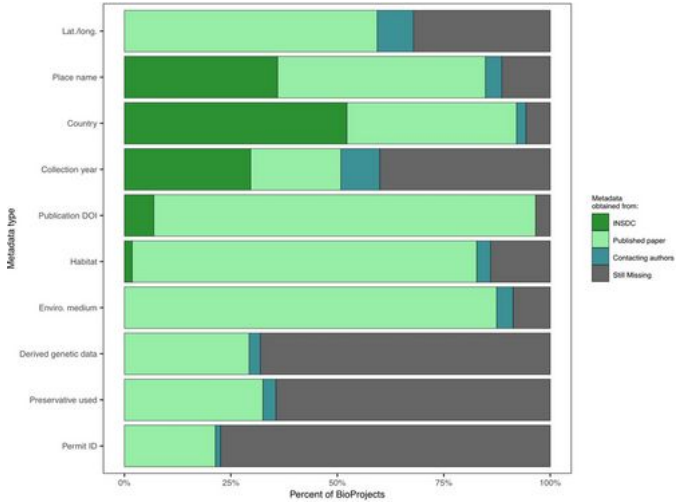
# Working Groups

- Special Feature in Proceedings of the Royal Society
- 13 publications with more in press!

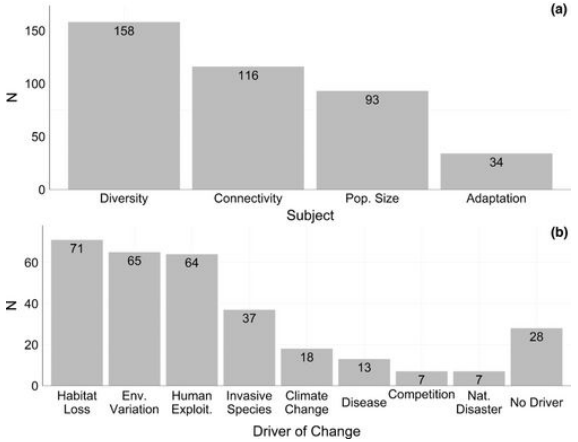
# Integrating eco-evolutionary and oceanographic models



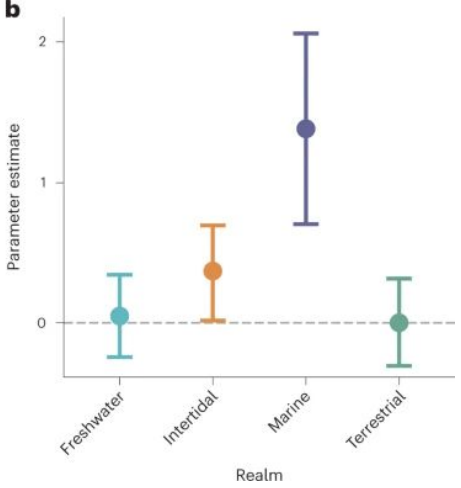

Metadata gaps in genomics hinders biodiversity surveillance



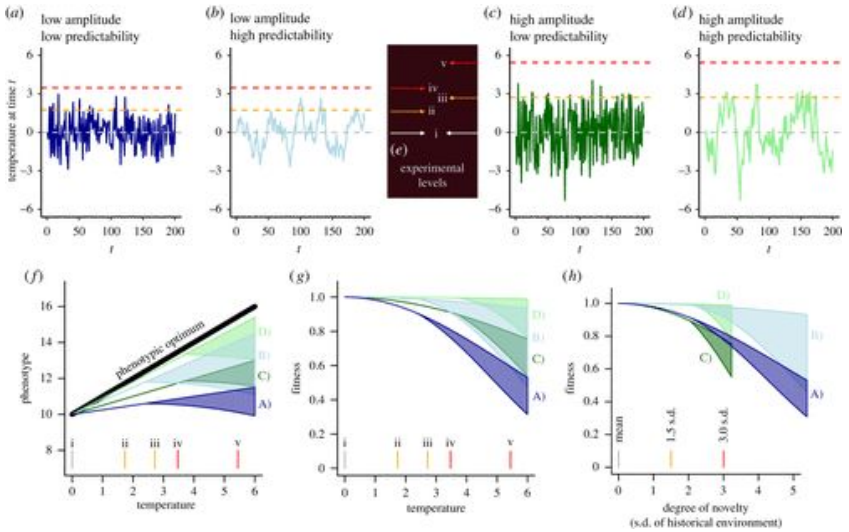

Temporal Genomics

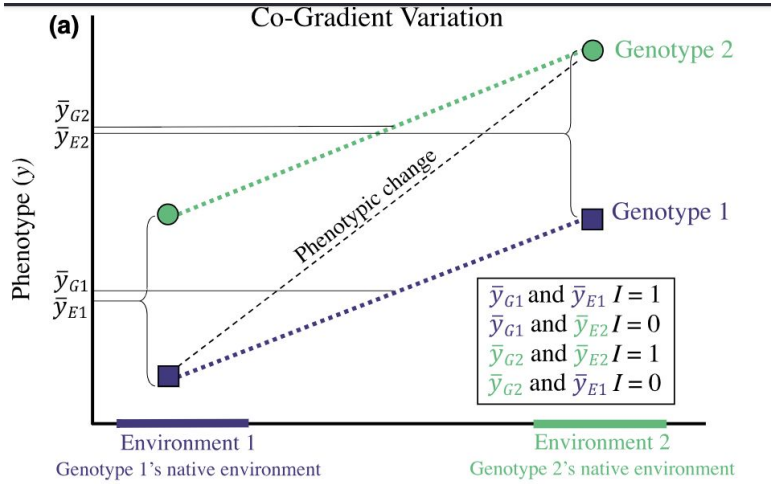


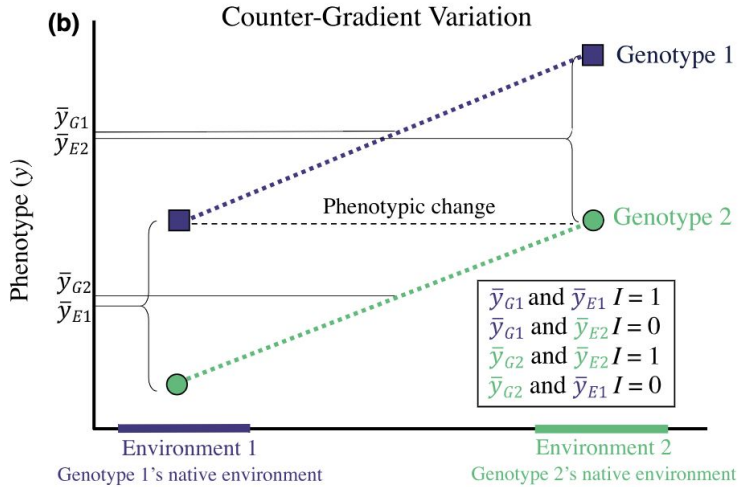
More variation in thermal plasticity on ocean than on land




Synthesis of plasticity evolution due to climate amplitude, predictability, and novelty






Quantitative method for measuring countergradient and cogradient variation

# Education

Guidelines for 'omics analyses
Topics
Panel Seminars
Reproducibility in Marine Genomics
Working Group Members
Internship
Contact

# Introduction

The MarineOmics working group is part of the RCN for Evoluti
**reproducible** and **robust** genomic research in nonmodel spe
next generation sequencing and bioinformatics advance at a
obsolete. MarineOmics aims to support robust genomic resea
through this dynamic, open-sourced website addressing intro
genomics.

**Rigorous**: following best principles to identify and mitigate s

**Reproducible**: when others can reproduce the results with ac

Marine Genomics 2021

1 Introduction to Marine Genomics

1.1 Cloud computing versus individ…

1.2 Meet our instructors!

1.3 Schedule

2 Week 1- Welcome!

2.1 Introduction to shell computing …

2.2 How to access the shell

2.3 Week 1 Objectives

2.4 Navigating your file system

2.5 Shortcut: Tab Completion

2.6 Summary & Key Points

2.7 Navigating Files and Directories

2.8 Moving around the file system

2.9 Examining the contents of other …

2.10 Full vs Relative Paths

# 1 Introduction to Marine Genomics

# Educational Resources from RCN Labs

Please help us build this page of educational resources for teaching at the intersection of marine and evolutionary science. We are particularly interested in teaching materials that feature or highlight research being done by people from diverse backgrounds.

## Elementary School (Grades K-6)

- Preschool Shell Matching Game

## Middle School (Grades 6-8)

## High School Students (Grades 9-12)

- This webpage put together by the Lotterhos Lab contains activities for teaching evolution and marine science, including:
  - Non-genetic inheritance
  - Effects of ocean acidification on marine calcifiers
  - Seagrass wasting disease
  - Modeling the Dynamic Oyster Microbiome (*Highlights research by a Latina*)
  - Using SliM to understand and simulate evolution
  - Curriculum for a 6-session "Learn to Code" workshop (1.5 hours per session)

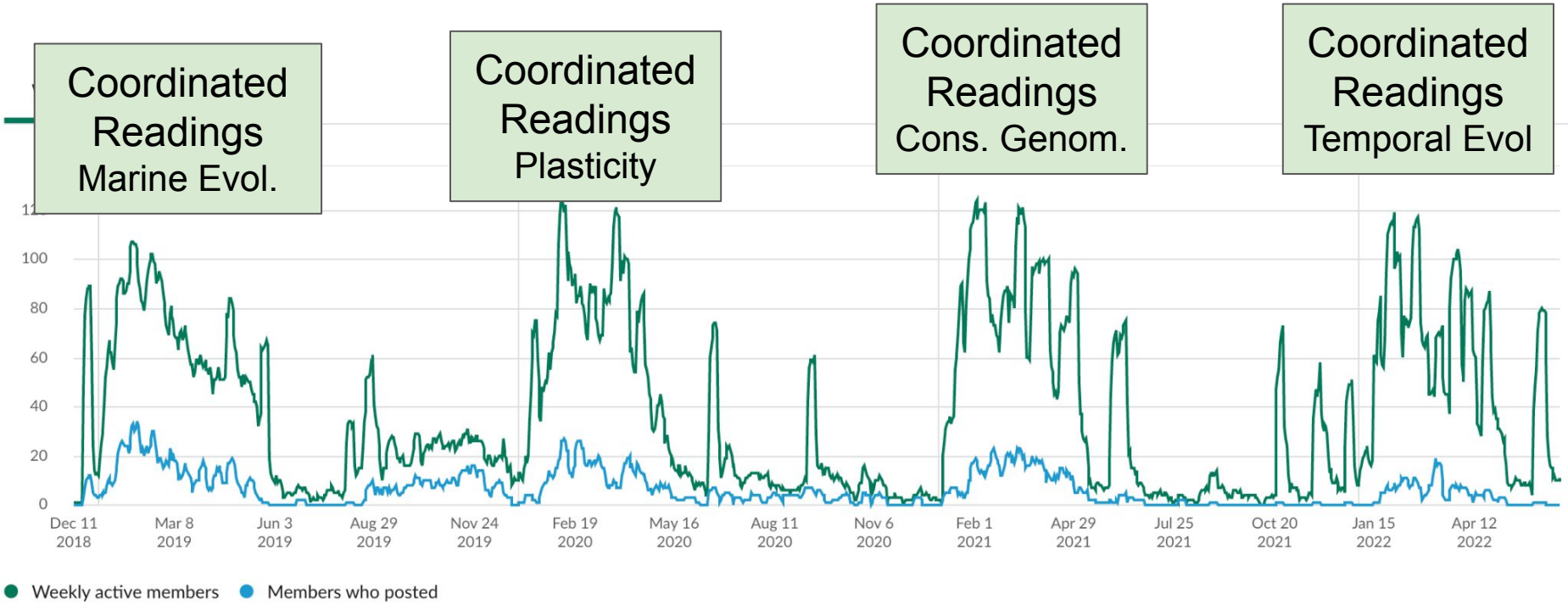
## Undergraduate Level

- Paper strip activities for understanding F-statistics For undergraduate and graduate students in learning population and conservation genetics. F-statistics convey important information about the genetic structure of populations. But what do they mean? This learning module teaches F-statistics in a backwards way than normally taught. Instead of giving students data and having them calculate the F-statistics, we give students the F-statistics and challenge them to build the populations that would have those statistics.

## Graduate Level or Upper Level Undergraduate

- A List of R Shiny Apps for Population and Ecological Genetics
- The webpage of the Temporal Genomics working group
  - You-tube recordings of 2021 seminar series and other resources
- The webpage for the marine-omics working group
  - Recordings of panel discussions on genomic data analysis and other resources
- [The webpages for Kelp and Urchin Genomics as a Gateway to Bioinformatics: Teaching Materials]
- Marine Genomics and Bioinformatics Course
- We have two versions of the Marine Genomics course available for use by the community and have made the materials accessible to both instructors as well as students. One version covers a semester (15 weeks) worth of material and the other covers a quarter (10 weeks) of material

# Coordinated Readings: Slack analytics



# Coordinated Readings

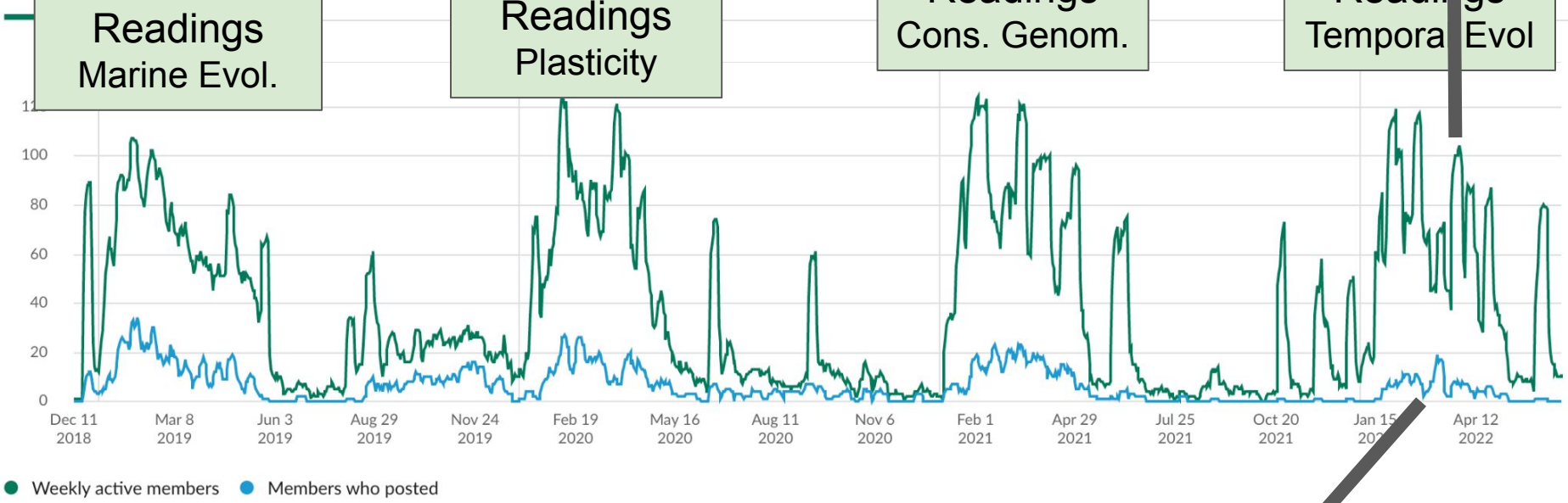
High rate of checking for postings

Coordinated Readings
Marine Evol.

Coordinated Readings
Plasticity

Coordinated Readings
Cons. Genom.

Coordinated Readings
Temporal Evol




Low rate of posting discussions

# Diversity and Inclusion

# Diversity, Equity, and Inclusion

RCN for Evolution in Changing Seas

DIVERSITY ▼ | MEMBERSHIP ▼ | EDUCATION ▼ | DATA | CURRENT ACTIVITIES ▼ | PREVIOUS ACTIVITIES ▼ | NEWS

- ANTI-RACISM STATEMENT
- DIVERSITY, EQUITY, AND INCLUSION

## RCN-ECS

The Research Coordination Network for Evolution in Changing Seas

Genece Grisby

# Trainees Featured on Webpage and Twitter

Bishnu Adhikari

Tait Algayer

Mahsa Alidoostsalimi

Kiran Bajaj

Alison Hall

Carmen Hoffbeck

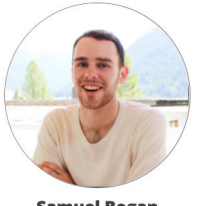
Kaleea Korunka

Nicola Kriefall

Lucia Barrera
Undergraduate at

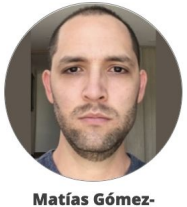
Tatum Bernat
Currently a Lab

Ian Birchler De Allende


Samuel Bogan
Ph.D. student at University

Margaret Campbell
Undergraduate at

Su Chung
Undergraduate at the


Matías Gómez-Corrales

Genece Grisby
Undergraduate at

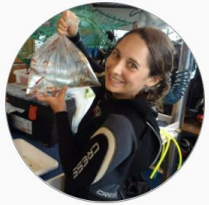
Jay Krithivas

Anna Krylova

Abigail Ladner

Andy Lee

Venkat M


Camila Mac Loughlin

Gabi Mendez

Melissa Naugle

Uzezi Okinedo

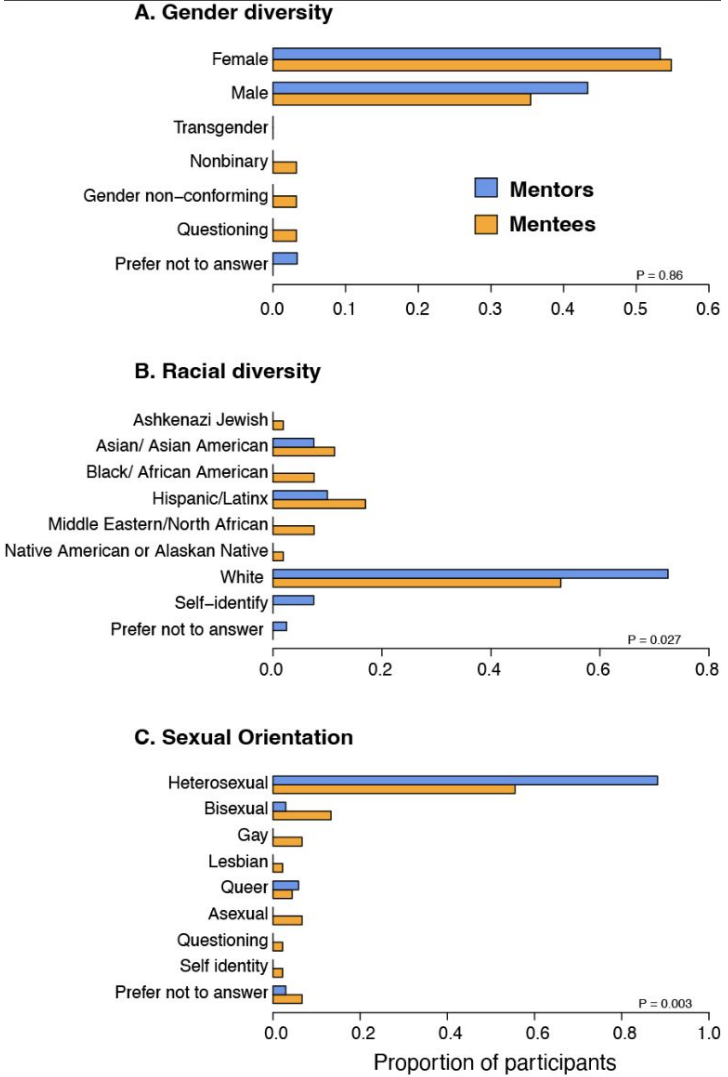
Raquel Ponce

Zoe Ruben

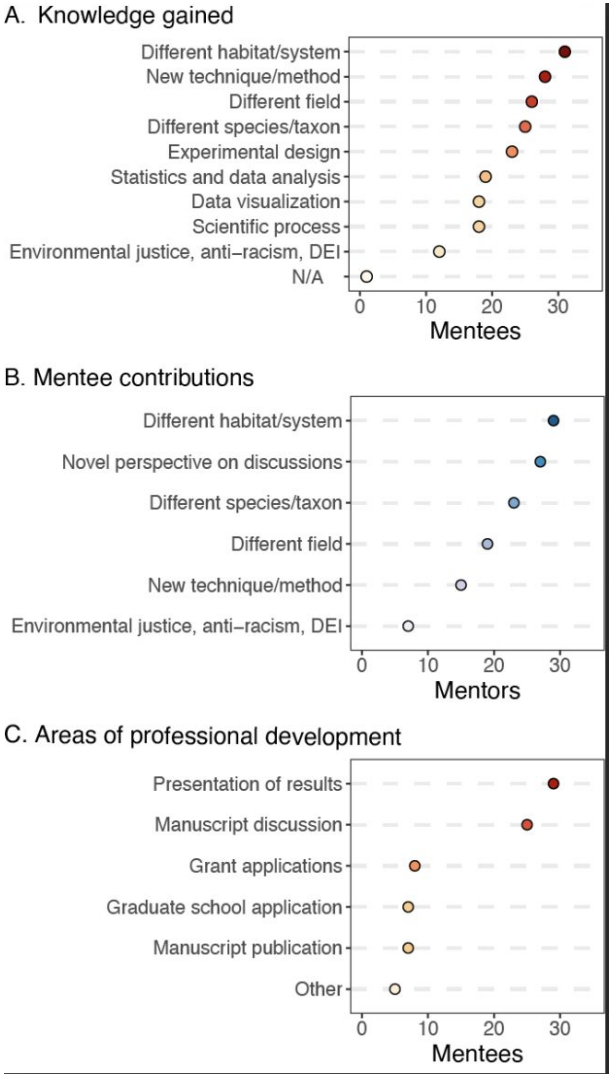
Anthony Snead

# Virtual Lab Meeting Training Program- Diversity

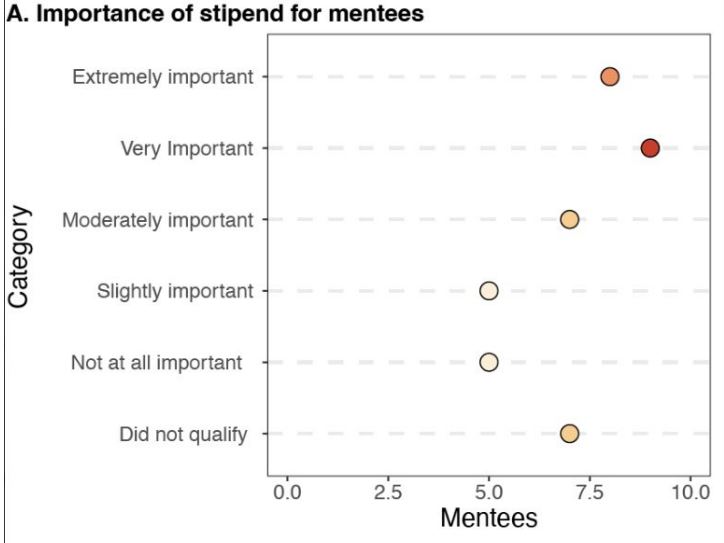
- Matches Mentees (undergrads, grad students, techs, in-betweeners) with Mentors
- Mentees receive a $500 stipend for attending 10 lab meetings virtually, and leading 2 lab meetings

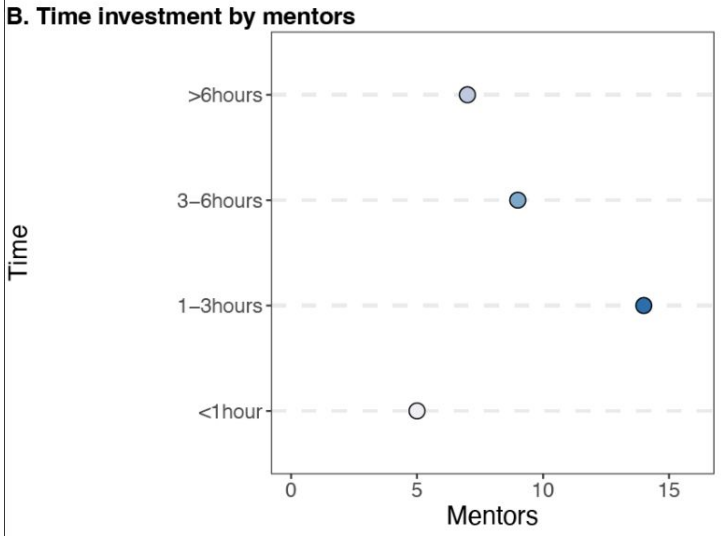


# Virtual Lab Meeting Training Program- Benefits

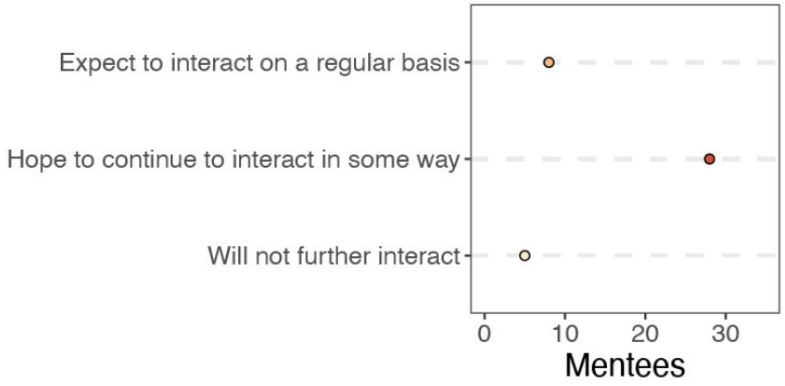


# Virtual Lab Meeting Training Program- Cost

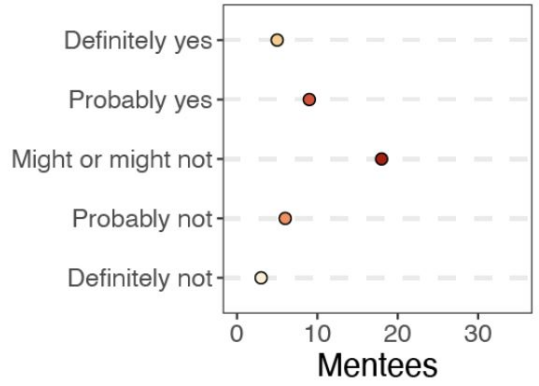


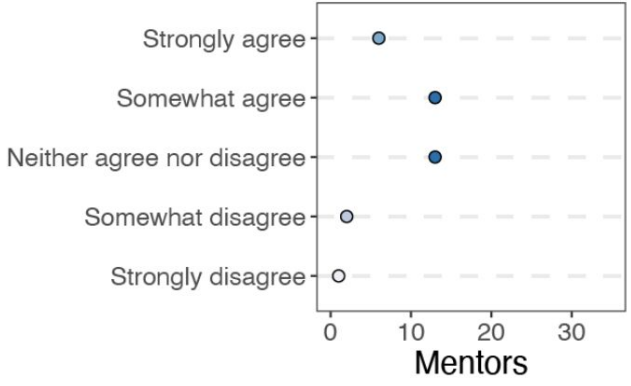
**A. Mentees future interactions with mentors**



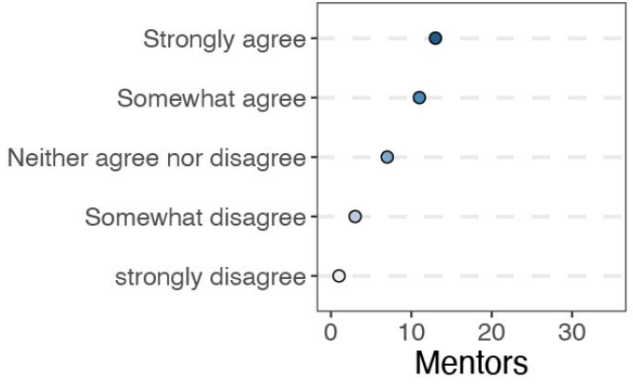

**B. Mentees future collaboration with mentors**



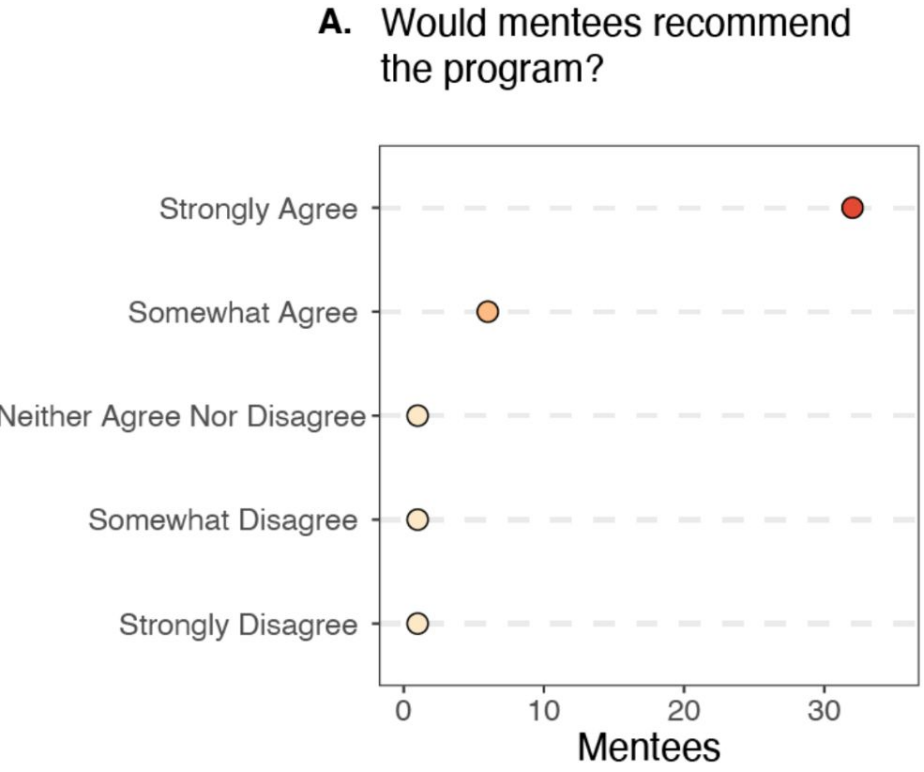

**C. Mentors future interactions with mentees**

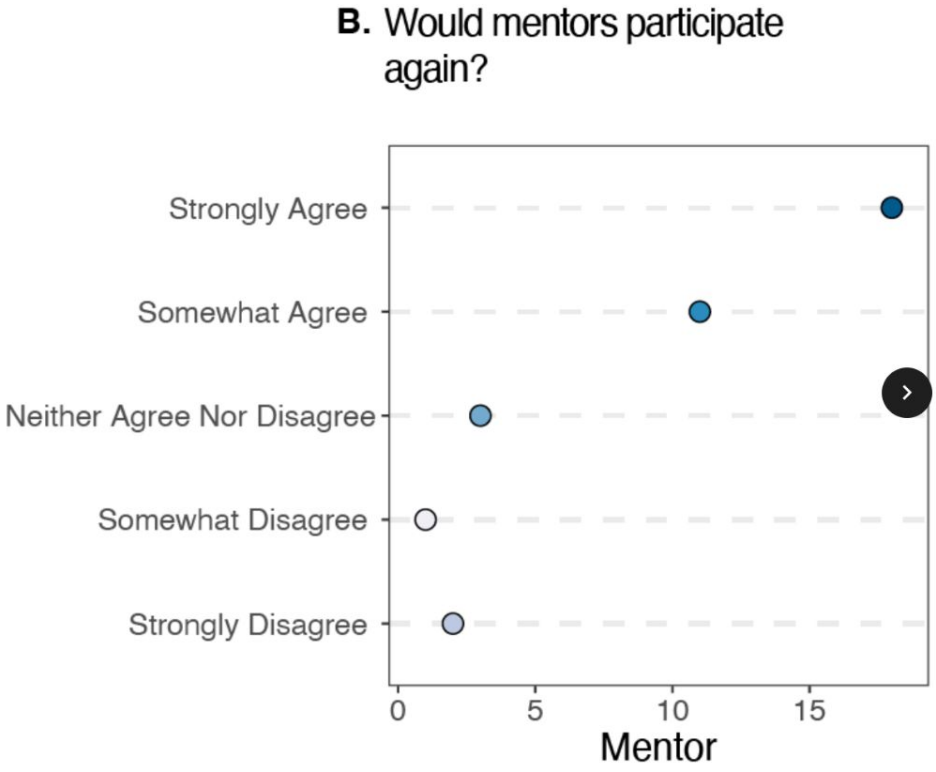



**D. Mentors see lab as resource for mentees**

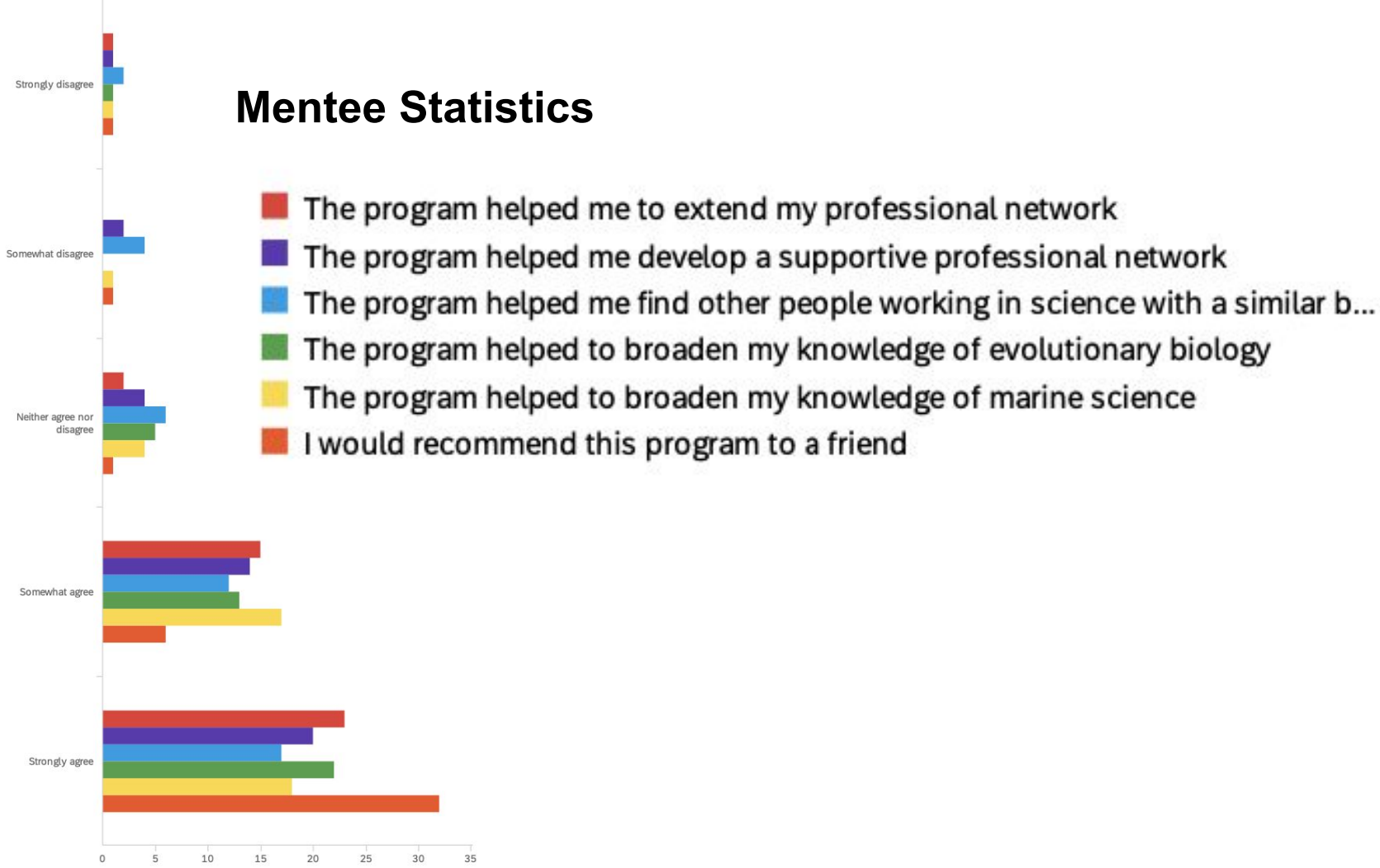


# Virtual Lab Meeting Training Program- Overall



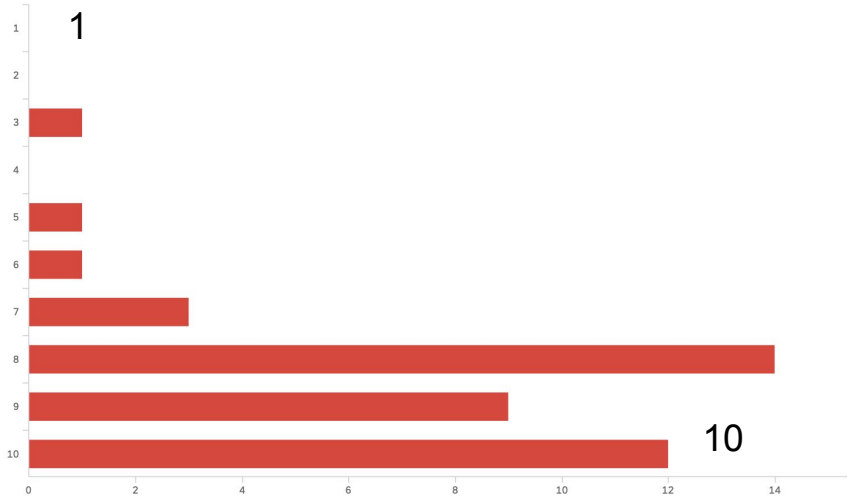



# Mentee Statistics

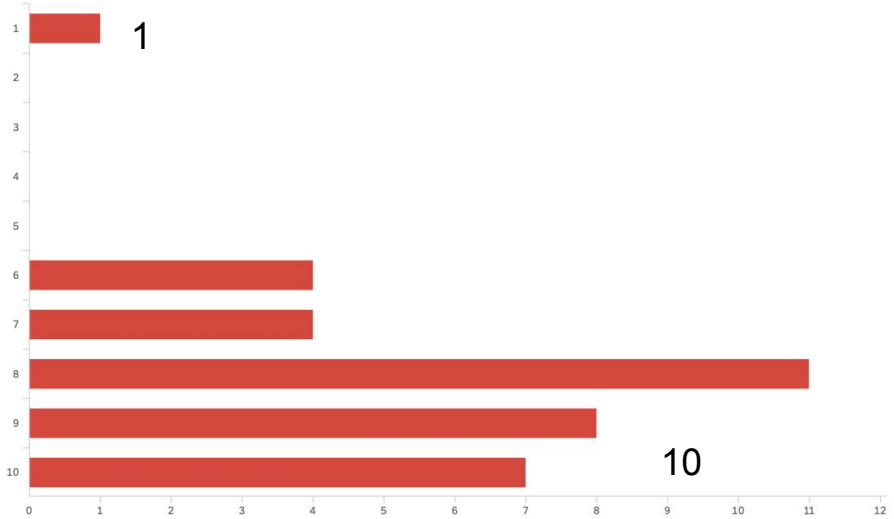


On a scale from 1 (lowest rating) to 10 (highest rating), please rate the Virtual Lab Meeting Training Program.

## Mentee Statistics



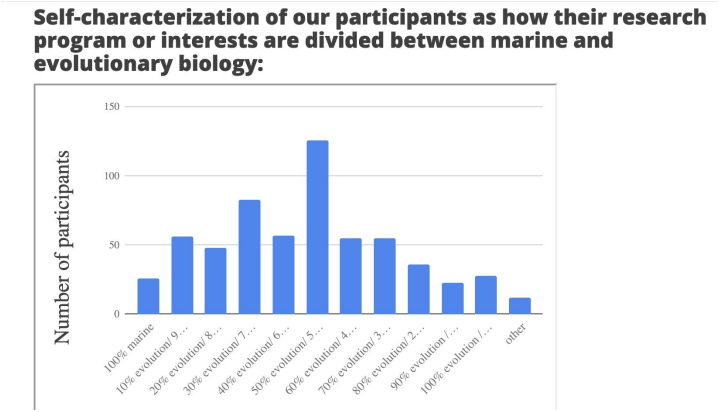

## Mentor Statistics



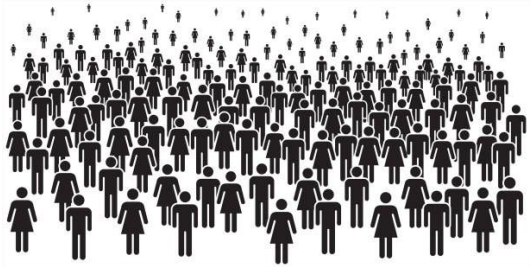

Mentees rate the program higher than mentors

# Reflections

# Tips for running an RCN




Membership sign up in Google Form, stats on webpage automatically updated



Working-Group Led Activities

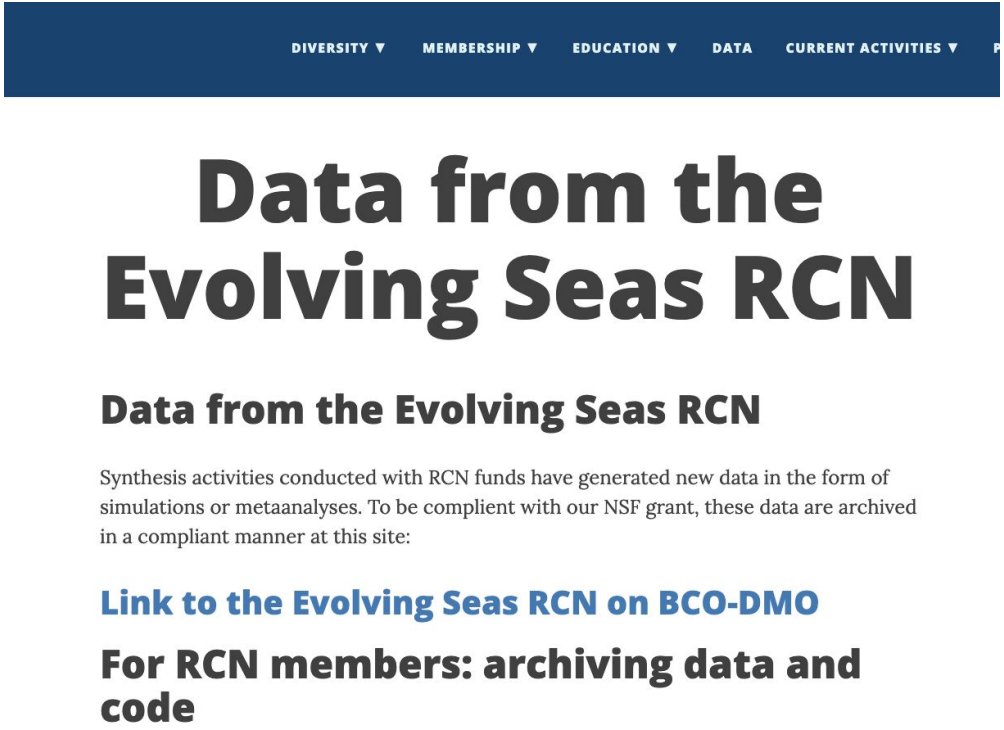
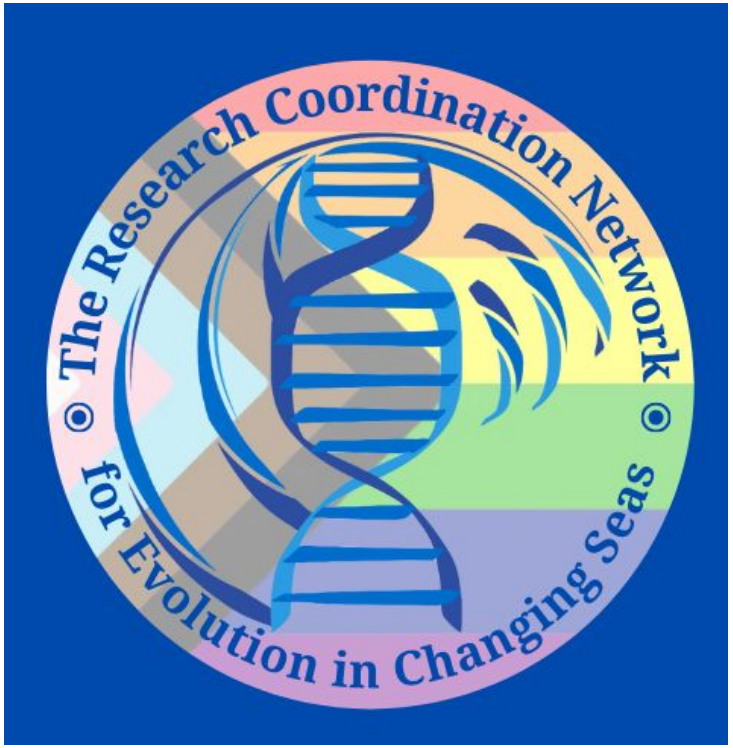
Pay stipends to junior working group members! (Thanks pandemic!)

Get annual reports from Working Groups in NSF format (Google Form)

Steering Committee, Diversity Committee, should add Grad/Postdoc Association

# Challenges running an open RCN

- Need administrative support
  - Logistics of organizing a large number of stipends and reimbursements
  - Logistics of organizing conferences
  - Keeping membership updated on webpage - people move - also active vs. inactive members
  - Fielding a large number of nuanced questions
- Annual Reports, Research.gov does not like to accept my spreadsheet of participants
- Getting working groups to upload data to BCO-DMO



Website: https://rcn-ecs.github.io/