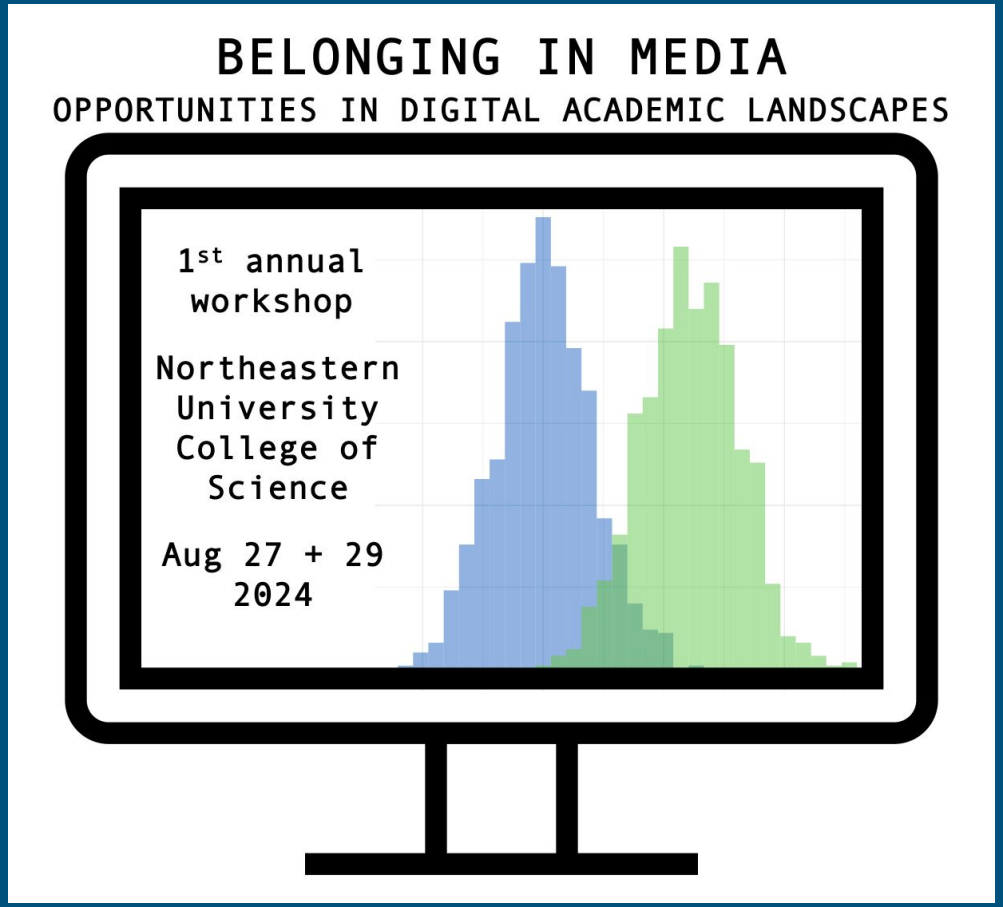


Welcome!!

BIMODAL Workshop

Workshop Instructor Intros

Madeline Eppley (they/them)
4th year PhD candidate
Marine and Environmental Science

Angela Jones (she/her)
4th year PhD candidate
Marine and Environmental Science

Lindsey Forg (they/them)
2nd year MS student
Environmental Science & Policy

Who we are!

Marine evolutionary biologist, queer in STEM, aspiring author + professor, athlete, beach enthusiast

Madeline (they/them)

Who we are!

Functional morphologist, future professor in STEM, and mentor to rising scientists of all demographics

Angela (she/her)

Marine biologist with a climate policy focus, photographer, educator, and viola player!

Who we are!

Lindsey (they/them)

Why we created BIMODAL

Digital spaces have defined my academic career! In these spaces, I have …

- Built my science community

MADELINE EPPLEY

They/Them

I am queer and I am an evolutionary biologist and marine scientist.//

I'm currently pursing a PhD in Marine and Environmental Science at Northeastern University in the Lotterhos Lab. For my PhD, I am studying the evolution of wild eastern oyster populations over space and time by integrating insights from population genomics approaches, environmental data, disease data, and historic museum DNA.

My research started as an undergraduate at Bard College at Simon's Rock, where I was an intern in the natural history collection and developed an interest in studying evolution. For my senior thesis, I investigated the prevalence of shark and swordfish meat substitutions in New England markets.

Outside of research, I am passionate about science communication, mentorship, and outreach to K-12 students. I am also working to re-define DEI initiatives with the aim of increasing belongingness of marginalized groups in ecology, evolution, and marine science fields. To this end, I have developed resources for the LGBTQ+ community and for navigating the graduate school application process.

@MadelineGEppley

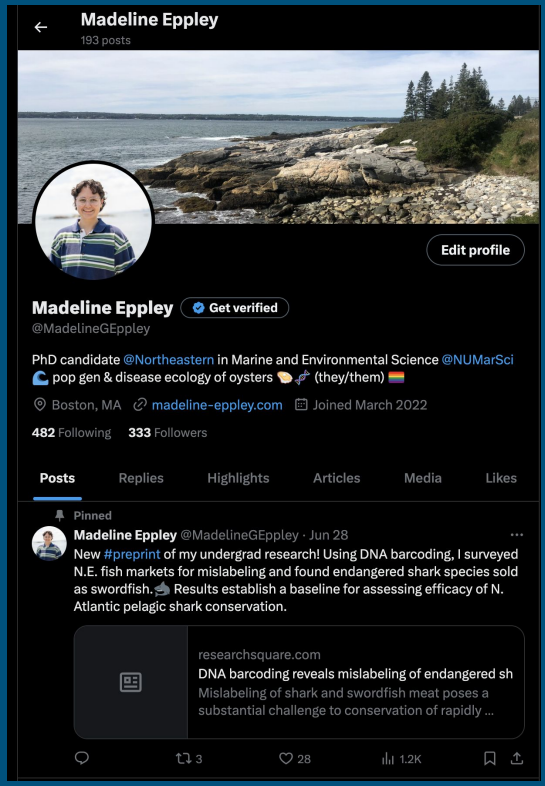
https://www.madeline-eppley.com/

Madeline (they/them)

Why we created BIMODAL

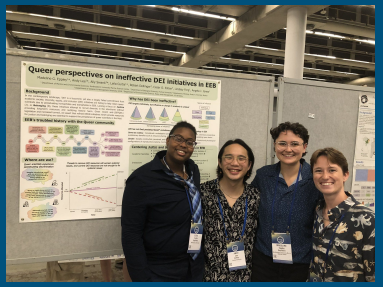
Digital spaces have defined my academic career! In these spaces, I have …

- Built my science community
- Found my PhD on twitter



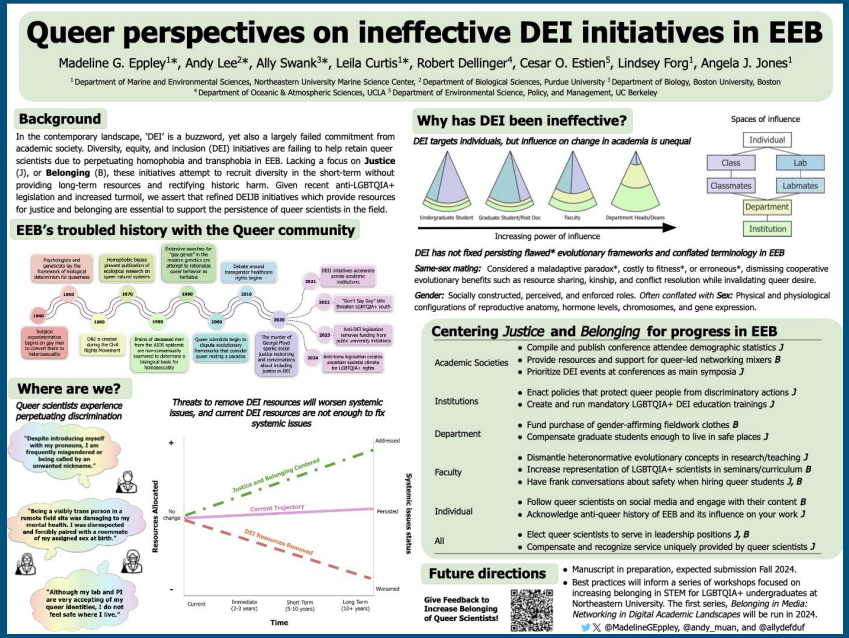
Madeline (they/them)

Why we created BIMODAL



Digital spaces have defined my academic career! In these spaces, I have …

- Built my science community
- Found my PhD on twitter
- Started collaborations and written papers with people I've only met digitally



Queer perspectives on ineffective DEI initiatives in EEB

Madeline G. Eppley[1]*, Andy Lee[2]*, Ally Swank[3]*, Leila Curtis[1]*, Robert Dellinger[4], Cesar O. Estien[5], Lindsey Forg[1], Angela J. Jones[1]

[1] Department of Marine and Environmental Sciences, Northeastern University Marine Science Center, [2] Department of Biological Sciences, Purdue University [3] Department of Biology, Boston University, Boston [4] Department of Oceanic & Atmospheric Sciences, UCLA [5] Department of Environmental Science, Policy, and Management, UC Berkeley

Background

In the contemporary landscape, 'DEI' is a buzzword, yet also a largely failed commitment from academic society. Diversity, equity, and inclusion (DEI) initiatives are failing to help retain queer scientists due to perpetuating homophobia and transphobia in EEB. Lacking a focus on **Justice** (*J*), or **Belonging** (B), these initiatives attempt to recruit diversity in the short-term without providing long-term resources and rectifying historic harm. Given recent anti-LGBTQIA+ legislation and increased turmoil, we assert that refined DEIJB initiatives which provide resources for justice and belonging are essential to support the persistence of queer scientists in the field.

EEB's troubled history with the Queer community

Where are we?

Queer scientists experience perpetuating discrimination

Threats to remove DEI resources will worsen systemic issues, and current DEI resources are not enough to fix systemic issues

Why has DEI been ineffective?

DEI targets individuals, but influence on change in academia is unequal

DEI has not fixed persisting flawed evolutionary frameworks and conflated terminology in EEB*

Same-sex mating: Considered a maladaptive paradox*, costly to fitness*, or erroneous*, dismissing cooperative evolutionary benefits such as resource sharing, kinship, and conflict resolution while invalidating queer desire.

Gender: Socially constructed, perceived, and enforced roles. *Often conflated with* ***Sex:*** Physical and physiological configurations of reproductive anatomy, hormone levels, chromosomes, and gene expression.

Centering *Justice* and *Belonging* for progress in EEB

Academic Societies	• Compile and publish conference attendee demographic statistics *J* • Provide resources and support for queer-led networking mixers *B* • Prioritize DEI events at conferences as main symposia *J*
Institutions	• Enact policies that protect queer people from discriminatory actions *J* • Create and run mandatory LGBTQIA+ DEI education trainings *J*
Department	• Fund purchase of gender-affirming fieldwork clothes *B* • Compensate graduate students enough to live in safe places *J*
Faculty	• Dismantle heteronormative evolutionary concepts in research/teaching *J* • Increase representation of LGBTQIA+ scientists in seminars/curriculum *B* • Have frank conversations about safety when hiring queer students *J, B*
Individual	• Follow queer scientists on social media and engage with their content *B* • Acknowledge anti-queer history of EEB and its influence on your work *J*
All	• Elect queer scientists to serve in leadership positions *J, B* • Compensate and recognize service uniquely provided by queer scientists *J*

Future directions

- Manuscript in preparation, expected submission Fall 2024.
- Best practices will inform a series of workshops focused on increasing belonging in STEM for LGBTQIA+ undergraduates at Northeastern University. The first series, *Belonging in Media: Networking in Digital Academic Landscapes* will be run in 2024.

Give Feedback to Increase Belonging of Queer Scientists!

@MadelineGEppley, @andy_muan, and @allydefduf

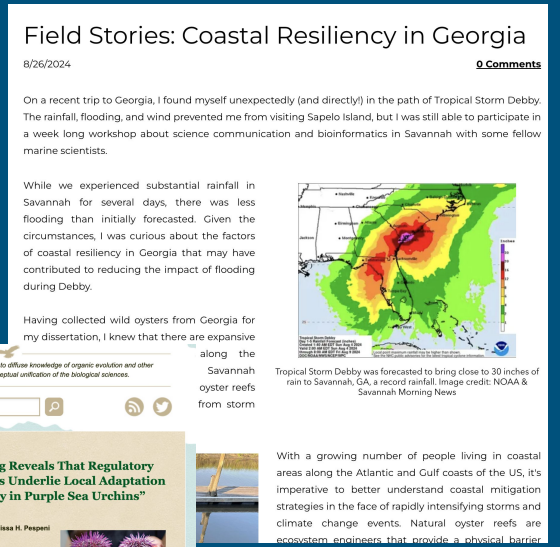
Evolution 2024 Conference poster
Montreal Canada

Why we created BIMODAL

Digital spaces have defined my academic career! In these spaces, I have …

- Built my science community
- Found my PhD on twitter
- Started collaborations and written papers with people I've only met digitally
- Explored science communication & increased my confidence as a scientist

My website & blog



Field Stories: Coastal Resiliency in Georgia

8/26/2024 **0 Comments**

On a recent trip to Georgia, I found myself unexpectedly (and directly!) in the path of Tropical Storm Debby. The rainfall, flooding, and wind prevented me from visiting Sapelo Island, but I was still able to participate in a week long workshop about science communication and bioinformatics in Savannah with some fellow marine scientists.

While we experienced substantial rainfall in Savannah for several days, there was less flooding than initially forecasted. Given the circumstances, I was curious about the factors of coastal resiliency in Georgia that may have contributed to reducing the impact of flooding during Debby.

Having collected wild oysters from Georgia for my dissertation, I knew that there are expansive oyster reefs along the Savannah from storm

Tropical Storm Debby was forecasted to bring close to 30 inches of rain to Savannah, GA, a record rainfall. Image credit: NOAA & Savannah Morning News

With a growing number of people living in coastal areas along the Atlantic and Gulf coasts of the US, it's imperative to better understand coastal mitigation strategies in the face of rapidly intensifying storms and climate change events. Natural oyster reefs are ecosystem engineers that provide a physical barrier

Science writing

American Society of Naturalists

A membership society whose goal is to advance and to diffuse knowledge of organic evolution and other broad biological principles so as to enhance the conceptual unification of the biological sciences.

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"Whole-Genome Sequencing Reveals That Regulatory and Low Pleiotropy Variants Underlie Local Adaptation to Environmental Variability in Purple Sea Urchins"

Posted on April 10, 2024 by Madeline Eppley

Csenge Petak, Lapo Frati, Reid S. Brennan, and Melissa H. Pespeni

Read the Article

Melissa Pespeni holding two adult purple sea urchins, the subjects of this study. Photograph by Joshua Brown.

The genetic basis of local adaptation to environmental variability is poorly understood, and few studies have investigated genetic regulatory regions for their role in local adaptation to environmental variability. However, mutations in these regions may be important for adaptation to variability, particularly for broadly distributed species across spatially and temporally varying environments. Variation in regulatory regions can change the expression of nearby genes, facilitating local adaptation. These regulatory regions may also underlie molecular mechanisms of phenotypic plasticity, critical for resilience to sudden environmental change.

Csenge Petak et al. of the University of Vermont, Burlington, addressed this knowledge gap by testing for signatures of local adaptation to temporal pH variability in the purple sea urchin. The purple sea urchin range encompasses a heterogeneous seascape, where northern Pacific coastal populations experience more variability in pH and higher frequency of low pH events due to upwelling. Importantly, low pH conditions are negatively associated with biomineralization ability and body size of urchin larvae, which can impede development.

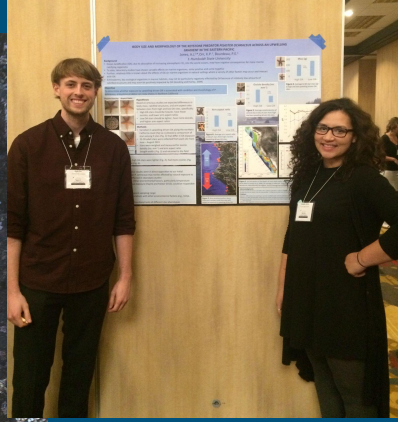
In their study, Petak et al. sequenced whole genomes of 140 purple sea urchin individuals collected from seven range-wide sites, ranging from Fogarty Creek, OR, to San Diego, CA. Despite finding no population structure across 1,700 km of seascape, they found that putatively adaptive genetic variants were strongly correlated with pH variability, associated with biomineralization and ion homeostasis, and largely found in genetic regulatory regions. This is an interesting paradox where extensive gene flow exists, but there are also population-level differences at specific loci correlated with adaptation to local environmental variability. The paradox could be explained by high genetic diversity in combination with low linkage disequilibrium, or high-fecundity, large populations that are responsive to strong selection.

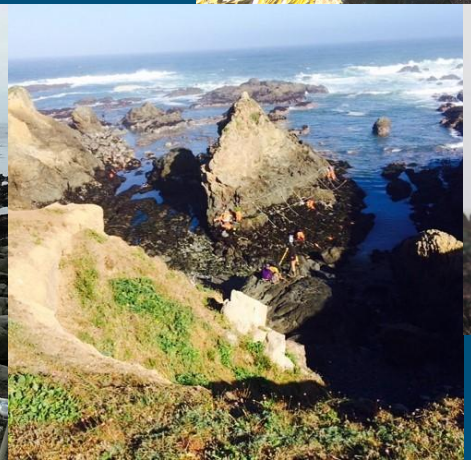
Madeline (they/them)

Why we created BIMODAL

All of my previous experience was in person events through countless hours!

- Volunteered as a teaching assistant for my favorite labs
- Became a lab manager in my undergrad
- Presented at many conferences
- All at personal expense of cost and time



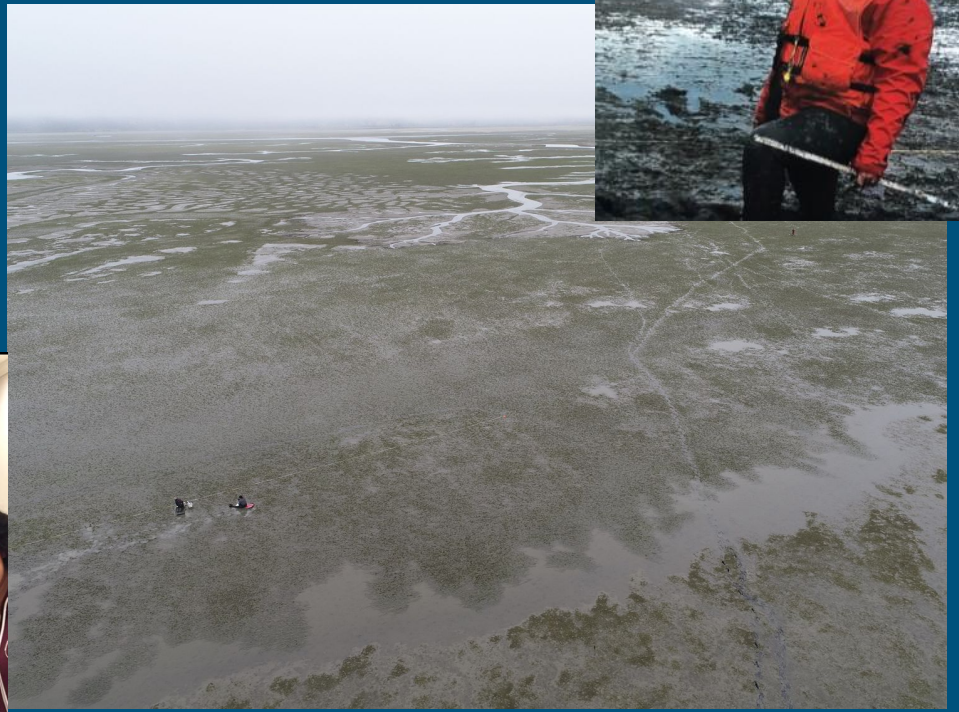


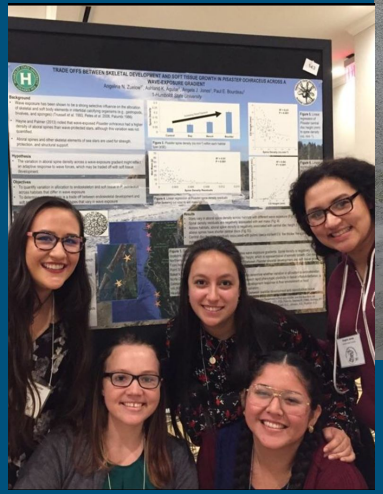
Angela (she/her)

Why we created BIMODAL

All of my previous experience was in person events through countless hours!

- Began my masters
- Began the transition to “expert”
- Presented at many conferences
- All at personal expense of cost and time



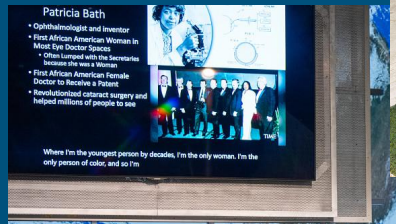


Angela (she/her)

Why we created BIMODAL

Now in my PhD, my research has gained momentum through opportunities from my advisor and from my own community connections.

- Presented at Museum of Science on what it means to be a scientist
- Met government officials of Curacao as the Proteus intern
- iDive New England Spotlight Feature
- IUCN SSC Marine Star Specialist Group Member

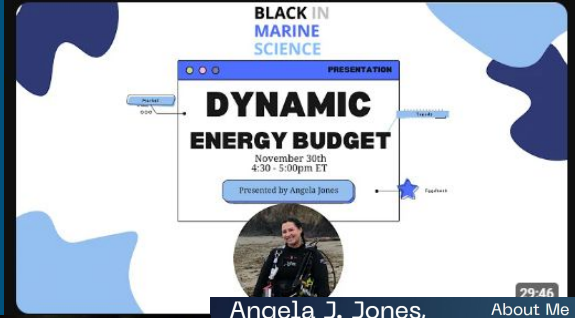


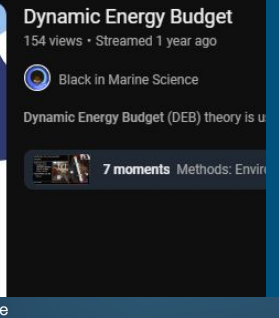
Angela (she/her)

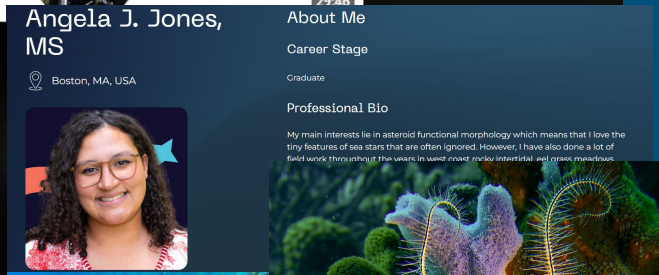
Why we created BIMODAL

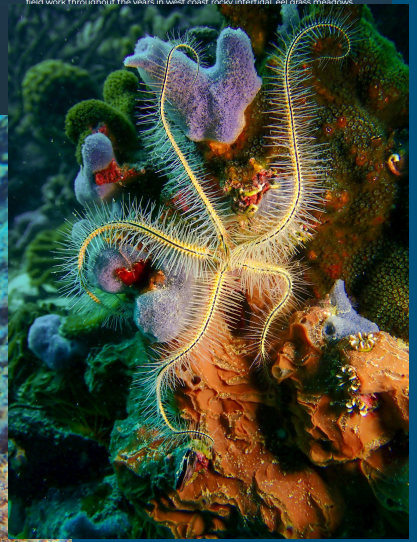
Outreach opportunities include

- Presented at Black in Marine Science (BIMS) week for Dynamic Energy Budget Models
- iDive New England Spotlight Feature
  - https://www.idivenewengland.com/spotlights/angela-jones
- Youth Environmental Alliance in Higher Education Fellowship (YEAH)
- 2nd place Best Visuals for Marine Life and Conservation from Underwater Society of America









Angela (she/her)

Why we created BIMODAL

Evidence of outreach opportunities…?

- Professional photographers
- But not flattering or done with care
- So we decided to do it ourselves
- Convinced Lindsey to join the cause because of their talent for photography and care for the individual

Angela (she/her)

Today’s Schedule - Main Campus

- Introductions (9:00 - 9:30)
- Community Building (9:30 - 10:00)
- Who are you and who is your audience? (10:00 - 11:00)
- Scientific Storytelling I (11:00 - 12:00)

- Lunch and independent work time (12:00 - 1:30)

- CV + Resumes (1:30 - 2:30)
- Personal Websites (2:30 - 3:30)
- Independent Work Time or Main Campus Headshots (3:30 - 4:30)
- Community Building (4:30 - 5:00)

Thursday's Schedule - Marine Science Center

9:00 - 10:00: Community Building + MSC tour

Group 1: Scientific Storytelling II (10:00 - 11:00)
Group 2: Headshots & Action Photos (10:00 - 11:00)

Switch Groups (11:00 -12:00)

Lunch and Independent Work (12:00 - 1:30)

Social Media & Digital Networking (1:00 - 2:00)
Picture Editing Session (2:00 - 3:00)

TRANSPORTATION

8:00 am - van pickup from main campus at Ruggles station

9:00 am - arrive at MSC

3:00 pm - departure from MSC

4:15 pm - return to main campus

BIMODAL Context - Why are we here?

Funded by an EDIJ grant from the COS

Workshop goals

Increase belonging, retention, and support of diverse STEM students by removing access barriers to digital networks

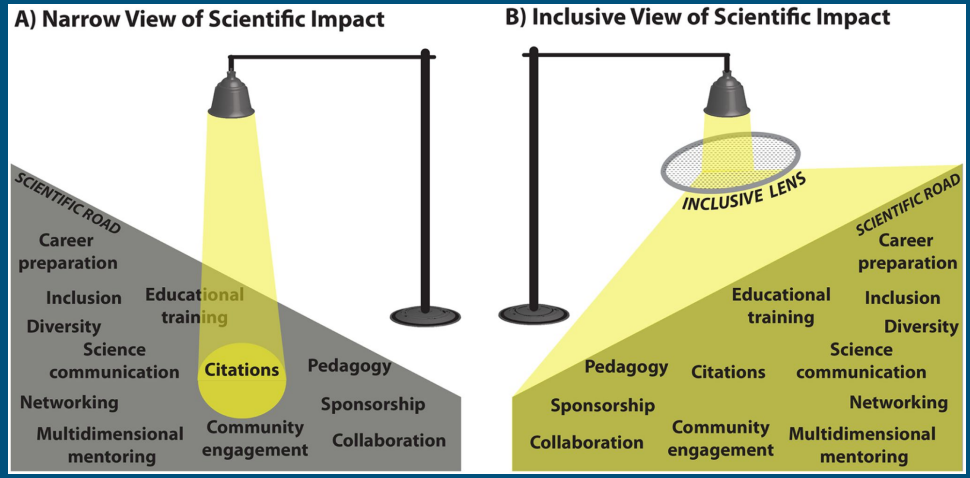
- Grow your academic network online
- Increase your confidence as a scientist
- Communicate science effectively
- Build your professional image

Northeastern University
College of Science

Context: Why build digital belongingness?

Benefits to broader scientific society

- Promote scientific work in diverse ways. This dismantles perpetuating bias and reliance on biased and exclusionary traditional metrics (e.g. citations)
- Positively drive altmetrics (alternative metrics, e.g. social media, news articles, interviews, etc.)
    - Valuable scientific impact can take many forms, including equitable communication and translation of science to general audiences (Davies et al 2021).
    - Contribute to a broadening values system in science!



Davies et al 2021

Community Building!

Our workshop networking space: Slack channel

- Join now using this link (https://join.slack.com/t/slack-u3a4817/shared_invite/zt-2peq2jvj6-YOPUbea_ft~xsP2q3kQV2A)

How to use our slack:

1. Ask each other questions
2. Share notes, links, or resources
3. Ongoing discussions after the workshop ends

Community Building!

Group share introductions

1. Name, pronouns, program & year at NU
2. Who do you communicate with about your science?
3. One cool story or fact about the science that excites you

Community Building - End of Day

Let’s develop an elevator pitch!

Elevator pitches are 30-60 seconds (or 3-4 written sentences) that describe you, your experience, your achievements, and your goals.

They can be used during in-person networking events or on your website!

Elevator pitches should:

- Communicate your personal brand
- Convey your unique selling points
- Answer the questions “Tell me about yourself’ “What do you do?” and “What are you interested in doing next?

Sample pitches - 1, job interview

Hi, my name is Theo Tiger and I am a junior studying computer science at Princeton. I am interested in cybersecurity and web development because they challenge me to use my analytical skills to keep information secure. Last semester, I worked with a professor to develop a program that analyzed the psychological effects of social media by Twitter users. Right now I am looking for summer internship opportunities, can you tell me about the internship opportunities your company provides?

Sample pitches - 2, linkedin bio

Hi, my name is Zoey Ali and I am a junior studying Material Science and Engineering with a minor in Computer Science. Last summer I interned at 3M working on a project with a team assessing the heat resistance of a new plastics product. I was able to use my skills in software engineering to analyze past product failures and predict upcoming product failures. While I am knowledgeable in statistical applications, I also have a strong background and interest in metals, energy, and manufacturing. In the future, I am interested in bringing my expertise to a company like Boeing, which shares my personal values of commitment and safety.

Elevator Pitch: Reflection

1 minute: What is your educational background? What is the most relevant or exciting class you've taken so far?

Elevator Pitch: Reflection

1 minute: What is your educational background? What is the most relevant or exciting class you've taken so far?

1 minute: What are some of your strengths or skills you're most proud of?

Elevator Pitch: Reflection

1 minute: What is your educational background? What is the most relevant or exciting class you've taken so far?

1 minute: What are some of your strengths or skills you're most proud of?

1 minute: What academic projects have you been involved in, or led?

Elevator Pitch: Reflection

1 minute: What is your educational background? What is the most relevant or exciting class you've taken so far?

1 minute: What are some of your strengths or skills you're most proud of?

1 minute: What academic projects have you been involved in, or led?

1 minute: What are your short-term (2-3 years) educational or career goals?

Elevator Pitch: Reflection

1 minute: What is your educational background? What is the most relevant or exciting class you've taken so far?

1 minute: What are some of your strengths or skills you're most proud of?

1 minute: What academic projects have you been involved in, or led?

1 minute: What are your short-term (2-3 years) educational or career goals?

1 minute: Describe a current trend in your field - why is it important and why is it relevant to your work?

Putting the pitch together

“Hi____, my name is___. I am studying___and will graduate in___. I am interested in____. I recently worked on a project that___. I am skilled in ___. My work applies to ___. My personal values are ___.

Optional ending, if interviewing for a job:
Can you tell me more about___?”

Sharing our elevator pitch!

Let’s share our elevator pitches - it’s ok if yours is still in development! This is a great opportunity to practice in front of a live audience.

For each elevator pitch, everyone should write down one comment to share with the speaker. Jot down a positive message or an opportunity for improvement on a sticky note!

Community Building Day 2!

Learn about someone else and introduce them!

- Pair up into groups of 2
- Spend a few minutes getting to know each other

Then, share to the group the other person's …

- Name
- Where they grew up
- Program at Northeastern
- What they study or research
- A hobby or activity outside of school