Exploring the Intersection of Biology and Sustainability

Outline and Overview
Led by Mary Ellen Wiltrout, PhD, Director of Online and Blended Initiatives, Lecturer, Department of Biology

Short Description

In this 3-day workshop, students will discover how climate and sustainability impact biology in the context of specific medical, ecological, and environmental cases. After discussing several case studies, students will select a topic of interest to research and share with the broader MIT community. You must participate in all 3 days in person for acceptance and a certificate of completion. No experience in climate or sustainability fields is required.

Learning Objectives

At the end of this workshop, students will be able to

- Define climate justice.
- Give a local example of climate justice in your community.
- Explain how local climate and environment impact disease.
- Describe a means to reduce the negative consequences of the local environment on disease.
- Research and present a case of how a climate and sustainability issue impacts a biological process, disease, treatment, or biological research results and suggest a solution, or research and present a case in which biology is the approach to a solution to a climate and sustainability problem.
- Share their new expertise with others in their local academic and personal communities.

Agenda

Day 1

Introductions (45 minutes)

- Mary Ellen Wiltrout, PhD leads a discussion on starting knowledge and backgrounds.

- Learn (3 hours, 15 minutes)
  - Mary Ellen leads a discussion on climate justice with materials from the Climate Justice Instructional Toolkit.
  - Mary Ellen leads a discussion on the case study of Nipah virus.
  - Lunch break
  - Moala Bannavti, PhD leads a discussion on air quality in public schools.

- Form groups of 2. Ideally with someone from a different school.
- Homework: Think about and decide on a project topic.

Day 2

.

- Learn (2 hours)
    - Mary Ellen leads a revisit to the topic of climate justice.
    - Mary Ellen leads a discussion on the bird flu.
    - Christopher Stevens, PhD leads a discussion on microplastics and their role in diseases.
- Lunch
- 1 - 2 PM Group work on project

Project Guidelines

- Work with a partner within and outside of the meeting hours to research and plan.
- Propose a topic that has a climate and sustainability impact on biology or that biology is the solution to a climate and sustainability problem. We encourage you to find a topic that you have personal ties to.
- Give a 15-minute presentation on describing the problem and propose at least one solution or step in a positive direction. Is there a tie to climate justice? If so, include that aspect.
- Describe something you learned from this workshop experience that you plan to share with others
- Aim your presentations to a general university audience.

Useful resources to research topics

https://climate.mit.edu/ (a good starting point: https://climate.mit.edu/explainers)
https://environmentalsolutions.mit.edu/climate-justice-instructional-toolkit/
https://learn.mit.edu/ (areas of interest: https://learn.mit.edu/c/topic/energy-climate-sustainability)

Student-Selected Topics for Projects

- Climate change impacts on wildlife, Yelena Hernandez and Maura Richardson
- Coral reef biodiversity, Camille Maxwell and Shante Perez-Nieto
- Applications of fungi in science and climate change, Samantha Mejia and Cameron Swart
- Fluoride contamination and regulation, Nikita Pavlenko and Kumail Naqee

Day 3

Project Presentations and Discussion (3 hours)
Student-Selected Topics for Projects

- Climate change impacts on wildlife, Yelena Hernandez and Maura Richardson
- Coral reef biodiversity, Camille Maxwell and Shante Perez-Nieto

- Applications of fungi in science and climate change, Samantha Mejia and Cameron Swart
- Fluoride contamination and regulation, Nikita Pavlenko and Kumail Naqee

Student Workshop Reflections

- Great content!
    - Suggestion to add the climate impact on culture in more detail
    - Suggestion to bring in the engineering perspective into the conversation as well
- Enjoyed meeting similar thinkers and being able to interact with each other and the speakers
- Suggested maybe having a few more people, but overall, the size was good
- Suggested increasing the content (4 days total) and including some lab tours at MIT
- Comment that it felt like a professional workshop, rather than an educational seminar, which was very impactful and appreciated