



PROJECT OCEANOLOGY



Maintaining Homeostasis during an Arctic Expedition

Modified from an activity designed by Defence Dynamics (www.defencedynamics.mod.uk) and available through STEM Learning (www.stem.org.uk).

In this activity, students listen to audio clips from Polly Hatchard, who trekked across Antarctica to the south pole as part of an all-female expedition. Worksheet 1 is focused on how environmental changes in temperature affect metabolism, and is aligned with the middle school version of the lesson. Worksheet 2 is aligned with the high school version of the lesson, and focuses on the homeostatic processes of thermoregulation, osmoregulation, and glucoregulation.

The last (and longest) clip is the most relevant, so if you are looking to shorten the lesson, focus on that one.

Audio clips:

1. **Introduction** (2:03): Background on Polly and her motivation for joining the expedition.
2. **Challenges** (2:18): Overview of challenges of Antarctica (extreme cold, low oxygen, etc), and more on the team philosophy and motivation.
3. **Equipment** (1:52): Description of gear carried on the expedition.
4. **Food, Cold, and Sweat** (7:44): A detailed description of some of the more unusual physiological challenges faced by the team. Note that there are some long pauses in this audio, so students should be alerted to listen to the whole thing.