



ALPHA SESSION

TASK α -1: Define the broad experimental parameters *within your area of specialty*.

- 1) Which variables/species will be important to include in our experiments?
 - Culture Species: Antarctic Cyanobacteria
Other Cyanobacteria?
Red Algae?
Other Ideas?
 - Inocula Concentrations: Species-dependent;
I will need to provide guidance in this regard
 - Measures of Life: CO₂ consumption
O₂ evolution
Chl-a concentration
Cell counts
Other Ideas?
 - Perhaps the students will suggest other variables?
- 2) For each variable/species, what range of values should be tested?
 - See above
- 3) What are your justifications for choosing those variables and range of values?
 - Antarctic cyanobacteria can survive freeze/thaw cycles; also possess unique photosynthetic apparatus to take full advantage of lower light levels; also resistant to higher UV radiation @ Antarctic.
 - Choosing the appropriate “measures of life” will require a bit more guidance on my part, for now, it is enough for students to brainstorm on the TYPE of measurements which could be performed to measure photosynthetic success and cell growth.

TASK α -2: For EACH variable, define at least ONE hypothesis we will need to test. If you have multiple hypotheses for each variable, all the better!

- 1) Try to structure each hypothesis in such a way that it can be easily answered by a numerical measurement, or by a simple “Yes-No” or “True-False” answer.
 - Example (True or False): Cyanobacteria from other regions (*i.e.* NOT from Antarctica) can survive daily freeze/thaw cycles.
 - Example (Numerical Measurement): How many hours does it take for the initial population to double in size?
 - Example (Yes or No): Can measures of CO₂ consumption and O₂ evolution be used interchangeably to estimate primary production during culture?