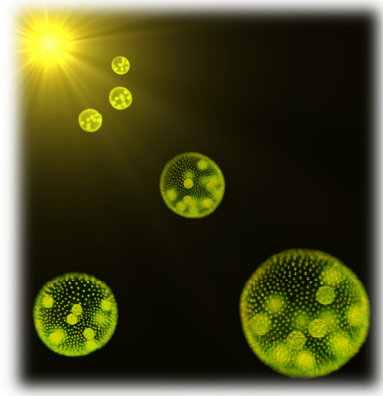# Algal Phototaxis

Background Information: Algae need access to light for photosynthesis and many algae have developed ways to sense and move in response to light, a process called phototaxis. Cells can move toward light when the light is low (positive phototaxis) or they can move away from lights that are too bright (negative phototaxis).

Research Question: How do algae respond to light?

Materials and Equipment:
- Motile Algae (*Euglena*, *Chlamydomonas*, or *Volvox* work best: May be obtained from Carolina Biological Supply or Ward Scientific)
- Large transparent test tube
- Black construction paper
- Scissors
- Tape
- Optional: Light source of varying intensity and/or wavelengths

Methods:
1. Cut a piece of black construction paper in an appropriate size to completely wrap around the test tube.
2. Fold the paper in half and cut a narrow slit in the construction paper at about the half-way mark.
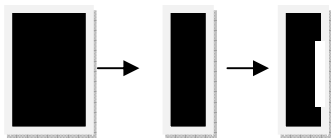
3. Attach the construction paper to the test tube using tape.
4. Add a concentrated culture of motile algae to the test tube and place in a test tube rack or clear cup to hold the tube upright.
5. Leave the test tube under normal classroom light for 30 minutes without disruption.
6. Remove the construction paper without disrupting the tube.
7. Observe the position of the algae in the tube.

8. Optional: Repeat the experiment using lights of varying intensities or colors, and see how the algae respond.

Analysis:
Algae in a concentrated culture displaying phototaxis will group near the slits and should be easily observed by the naked eye. Differences may be observed in the behavior of the algae grouping in response to varying intensities and/or wavelengths of light.

Questions:
1. Did the algae in your experiment display positive phototaxis or negative phototaxis?

2. Why do you think algae display this behavior?

3. Where do you think algae will be found in a pond on a bright sunny day?

4. Where do you think algae will be found in a pond on a cloudy day?

Extra Reading:
http://www.nature.com/news/2008/080425/full/news.2008.781.html

Video:
http://www.youtube.com/watch?v=pdgkuT12e14&feature=player_embedded#