

Life ScienceDuckweed & Lumbriculus Experiments

**DIRECTIONS**—Below, you will find a series of questions related to both your duckweed and your *Lumbriculus* specimens. Your job is to choose a duckweed question and a *Lumbriculus* question and perform two experiments that will answer those questions. Follow the outline on the back of this paper beginning with "Hypothesis". You may write on this paper for one experiment and use a blank sheet of paper for the other experiment. **WARNING!** Death of your worm/duckweed due to experimentation earns 0 credit for this assignment.

Lumbriculus questions

- Test the sense of smell of your worm. Will they respond to food placed several inches away? At what distance is there response?
- What is the response of your worm to a vibratory stimulus? Will they respond to vibrations? What is the response to gravity? What effect does gravity have on their ability to move? Will they move horizontally and vertically at the same speed? Is their weight a significant burden? Do those with heavier weight move slower than lighter ones?
- Does your worm have a righting reflex (will they turn over and right themselves if placed on their backs)?
- Does your worm show any preferences for rough or smooth surfaces, such as sandpaper, mud, rocks with sharp points, plastic, etc
- Test your worm's tactile response, its sensitivity to touch, gently probing it with a blunt instrument. Is the head end more sensitive than the tail end? Are all areas of the body equally as sensitive?
- Test the effects of light (without heat!, heat will kill your worm). Set up your biome jar so that one end is light and one is dark. Where do the worms spend most of their time? Experiment with light of different colors using colored cellophane paper, saran wrap, etc. Do they prefer red over blue, or can they not even tell the difference?
- How fast can your worm travel? Prepare a bull's eye chart with concentric circles 5mm apart. Start your worm in the middle and time how far out it travels in one minute. Do this several times and average your data. What stimuli make your worm go faster or slower (other worms, food, light, dark, etc)?
- Does water temperature affect the speed of your worm? Do they move faster in warmer water (they die easily in warm water).

Duckweed questions

- Does electricity have an effect on the growth of your duckweed?
- Will the effects of a magnetic bar placed in the water have any effect on plant size, color, germination time, or population numbers? What effect does the orientation of the magnet have on the plants?
- Can pencil shavings be a source of nutrients for your duckweed? How could you tell?
- What effect will adding a small vs. a large piece of multi-vitamin to the water have on the growth rate of your duckweed?
- What effect will adding a piece of smoking tobacco (supplied by your instructor!) have on the growth rate of your duckweed?
- Will adding different concentrations of burned ashes to the water affect germination of your duckweed?
- What is the effect of varying amounts of light on your duckweed plant? Will any plants at all grow in the dark?
- Does colored light affect the reproductive rate of your duckweed?
- What is the effect of growing your duckweed plant in 7-Up vs. Gator-aid vs. one of Mr. T's famous seaweed soybean shakes?
- Does adding hog manure to your duckweed increase growth rate?
- Is your duckweed population growth rate affected by varying the turbidity of the water it is grown in?
- Is your duckweed population growth rate affected by varying the oxygen level of the water it is grown in?
- What effect does increasing nitrate level have on the growth rate of your duckweed?
- Is your duckweed population growth rate affected by varying the temperature of the water it is grown in?
- Is your duckweed population growth rate affected by varying the turbidity of the water it is grown in?
- Will plants grow larger and be healthier if given tea or coffee instead of plain water?

**Experiment # 1**

**Organism:** \_\_\_\_\_

**Hypothesis (What is the question you will be answering and what is your prediction about what will happen)?**

**Describe the experiment you will design to test your hypothesis:**

**Draw your setup:**

**Describe your control group**

**Results (what happened):**

**Conclusions (did your experiment prove or disprove your prediction):**

---

**Experiment #2**

**Organism:** \_\_\_\_\_

**Hypothesis (What is the question you will be answering and what is your prediction about what will happen)?**

**Describe the experiment you will design to test your hypothesis:**

**Draw your setup:**

**Describe your control group**

**Results (what happened):**

**Conclusions (did your experiment prove or disprove your prediction):**

# Lumbriculus Journal

**Predictions:**

### Questions:

[illegible]

## Duckweed Journal

### Predictions:

### Questions:

[illegible]