



BIO BUGS

STUDENT INSTRUCTIONS

Part 1 – Termite Behavior

- 1. Break into groups of 3 and put on nametags.**
- 2. Assign a role** to each member of the group:
1 (*) *Animal Care Technician* (Termite Wrangler), 1 (#) *Molecular Technician*, and 1 (\$) *Principal Investigator*

(*) *Animal Care Technician*: in charge of the keeping the termite alive and safe. Try to avoid touching the termite with their hands (for the termite’s safety). Instead move it around with the cotton swab as much as possible.

(#) *Molecular Technician*: Obtain all materials required for each experiment.

(\$) *Principal Investigator*: Record hypotheses and data.
- 3. Get pens, paper, termites, forceps, and a worksheet** from the front of the laboratory.
- 4. Observe the line-following behavior of the termite. Describe this behavior on your worksheet.**
- 5. Form hypotheses** regarding the termite’s response to the pen lines. The (\$) *Principal Investigator* should write these down on your worksheet. **Discuss** your hypotheses with a teacher.
- 6. Write down a test for each hypothesis on your worksheet.**
- 7. Perform the experiments** you designed in Step #6. Don’t forget to **record all of your data!**
- 8. Prepare to present your results to the group. What hypothesis has the most support based on your experiments?**

*****STOP AND AWAIT INSTRUCTIONS*****

Part 2 – Termite Pheromones

9. (*) *Animal Care Technician*: **get a dead termite and use the forceps to chop the termite into its 3 body sections:** head, thorax, abdomen.
10. A teacher will come around to collect each body part in a tube. Note that the tubes already contain ethanol so that we can make a liquid mixture.
11. **Design a test** to see which body section they termites prefer, using the Papermate pen as a “positive control”.
12. **Briefly discuss** your experimental design with a teacher.
13. **Conduct your experiment.** The (\$) *Principal Investigator* should **record all data.**
14. **Prepare to share your results with the class.**

*****STOP AND AWAIT INSTRUCTIONS*****

Part 3 – Termite Genetics

15. (#) *Molecular Technician* should obtain an agarose gel from a teacher.
 16. Each student should load two lanes of the gel.
 17. **Start the gels running and record the time.** **You will need to shut it off in 10 minutes.**
- *****STOP AND AWAIT INSTRUCTIONS*****
18. When the gels are finished, have the (#) *Molecular Technician* **give the gel to a teacher to put into the ethidium bromide solution.** It needs to soak in the solution for 12 minutes.
 19. After 10 minutes, rinse the gel in water and **place gel on UV for visualization.** This method allows you to actually see the DNA!
 20. **Have the (S) *Principal Investigator* draw the results of the gel on the worksheet.**