Team Lab Notebook (TLN)
What’s Alive? (Lab #2)

Team Name:
By: (Enter the full names, and team roles of the team members who are present at today’s lab)

Date:

Make sure that you read the Lab #2 Student Instructions for this lab as you work on each activity in this TLN!!

A reminder! Surfing the internet during lab is prohibited. Internet use is restricted to lab research purposes!

Activity 1. What’s Alive? (4 pts)
Our team decided the following about whether or not each of the “things” should be considered alive or not.

<table>
<thead>
<tr>
<th>Alive!</th>
<th>Not Alive</th>
<th>Unsure??</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Of the things above one thing we believe is definitely alive is ________________. We believe this because...

<table>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Of the things above one thing we believe is definitely NOT alive is ________________. We believe this because...
Activity 3. Practice using the O₂ and CO₂ probes (5 pts)

Record your team’s data in the table below. Be sure to indicate the sign of the measurement (+ or -) and indicate the units of measurement!

<table>
<thead>
<tr>
<th>Team Data Table - Crickets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate of change of gas concentration (using regression tool)</td>
</tr>
<tr>
<td>CO₂</td>
</tr>
</tbody>
</table>

When we divided the rate of change of [CO₂] by the total mass of our crickets, our unit of measurement changed from _____________ to ______________.

Write a brief explanation of what this change in the unit of measurement means, conceptually.

Activity 4. What property of life in crickets are we measuring? (2 pts)

Our team concluded that the property or characteristic of life we are measuring is

Our justification for this is

(Discuss specifically biological process is causing the O₂ and CO₂ to be released or taken up by the cricket. You can use your textbook to help you with this!)

Activity 5. Testing for signs of life

The “things” that we, along with the team we paired with, decided to study are:
Activity 6. Developing a control group, hypothesis, and experimental prediction

Developing a negative control (3 pts)

The purpose of this negative control is to determine if something we may not have considered is affecting CO₂ or O₂ concentration in the bottle beside the “thing” we put in it. What are some other possible reasons the CO₂ concentration in the bottle may change?

- To account or negate that effect of these factors, we decided that the negative control for this experiment should be:

Our procedures for collecting data on both the experimental group (the “thing” you are testing) and the negative control group are:
Developing a hypothesis and experimental prediction (3 pts)
In the space below, write your team’s experimental hypothesis and prediction. Be sure to read the guidelines for Activities 3 and 4 in the Student Instructions, before you do this.
If ____________________________________________________________
   (general hypothesis)
   ____________________________________________________________
then __________________________________________________________
   (specific experimental prediction)
   ____________________________________________________________
   ____________________________________________________________

Activity 7. Testing your hypotheses and predictions (8 pts).

1. Why is it important that we do more than one trial for both the experimental and control groups?

2. Why is it important that we use a different sample of “things” in each trial? (Hint: Imagine you wanted to know about the effectiveness and safety of a cancer-fighting drug. Would you want it to be given to many people once, or to one person many times before you took it? Why?)

3. Why is it important that the same procedures are followed by both of the teams conducting the experiment?

4. Why is it important that we divide the rate of change of each gas (CO₂ & O₂) by the mass of the sample “thing” for each trial?
Activity 8. Recording and summarizing the class data (5 pts).

Record both team’s data in the table into an MS Excel spreadsheet on your computer, and determine the mean (and standard deviation) rate of change in gas concentrations for both team’s data for the “thing” you examined. Summarize your data graphically in MS Excel. Review Appendix C on graphing to help you decide the type of graph you should use. Place the graph below your data table in the MS Excel file.

Save your MS Excel spreadsheet to your section’s folder on the desktop. **Consult with your instructor on whether you should**

1. Attach a printout of the spreadsheet, which includes your data table, graphical summary, and the results of your statistical test to your TLN.

   OR

2. Provide the electronic Excel file to your instructor via email or saved on their jump drive.

Activity 9. Other Characteristics of Life?

After examining/researching more about our specimen, we identified that it possesses the following other characteristics that are indicative of life:

Activity 10. Drawing Conclusions (10 pts)

Discuss your conclusions with your team members, and work together to develop a concise statement of your conclusions for this experiment. There is a separate page in Lab 2 Student Instructions of your lab manual with questions to consider when drawing conclusions about this lab. Be sure to address them in your conclusions.

Homework Activity – Be sure to complete the homework activity in your lab manual in preparation for next week’s lab.

**Complete the cleanup checklist on the next page BEFORE you leave lab**

- Our work area is clean.
- Our gas sensors are put back in the rack on the center tables, cords are untangled, and coiled neatly, but NOT wrapped around the probe, and stored upright in the racks.
- Our LabPro (green data logger) units UNPLUGGED from the power source and are neatly stored at our computer work station. Computer cables can remain plugged into both the LabPro unit and the computer.
- Our lab table and stools are wiped down.
- Trash is discarded.
- Biochambers are washed with soap, rinsed, dried and returned to the center table.
- Class common work area is clean and materials/instruments/specimens are returned to their proper place.
- Any computer files you saved are in your section’s folder on the desktop.
- All applications (LoggerPro, Excel, Word etc...) on the computer are closed.
- The computer should remain on.
- The settings on the computer are as they were when you entered the lab (background, toolbar setup etc..).

___________ Your lab instructor must initial here, indicating that your work area is clean before you may leave the lab.

Failure to clean up, or leave lab without your instructor’s initials, will result in 10 points deducted from this week’s TLN grade.

Please do not forget to complete the Peer Evaluation form, and turn it in to your lab instructor before you leave.