Internal Assessment Research Question Selection

Estimated completion time: 2-3 hours. Do not rush this task. It is vital that you select a problem question that is actually "doable" for an IA. If you rush this task, you will be wasting your time and need to complete it again anyway. Do a thorough, good job in the first place.

No two IB Bio students can have the same research question and methodology.

Before you select a problem question, spend some time thinking about what you would like to investigate.

- Choose a topic that is interesting to you; you'll be working on this for a long time! Think about issues your family deals with; maybe there are personal reasons why a topic might interest you.
- Flip through a textbook (look at some websites) for inspiration.
- Think about lab skills you've already learned and could use to answer a new research question.
- Think/ask about the equipment available. (Think of what we have used but you can ask questions about this and I will help guide you)
- Make sure you can collect sufficient data to do some sort of statistical analysis

<u>Watch out for common mistakes</u>

- Not collecting enough data or having a large enough sample size (you need at least 5 levels of the manipulated variables, and each level should be repeated 5 times; at least 25 data points)
- Designing too simple or too complex an experiment (I will help guide you)
- Repeating an experiment we've already completed in class (it can be a variation but not an exact repeat)
- Not following bacteria guidelines (only bacteria purchased through a licensed supplier)
- Ignoring human and animal experimentation guidelines (nothing that asks a person to consume anything, no collected fluids, nothing that might be dangerous)

To select your question, you will answer the following questions:

1. Which IB TOPIC do you want to investigate in your internal assessment? *For example, C1.2: Cellular respiration*

2. Are you going to do a:
    a. A controlled experiment with manipulated and responding variables
    b. A descriptive analysis of an ecological field site
    c. Database analysis
    d. Simulation analysis

3. If you are doing a database or simulation, provide a link to the dataset or simulation you will be using. Keep in mind, you must analyze raw data sets, not data that has already been processed.

4. What variable(s) are you going to manipulate, change or correlate?

5. What responding variable are you going to measure? *The responding variable must relate to a biological function, process or function.*

6. What is your proposed research question? **Good research questions are very focused; try to narrow the question down to the exact relationship you are trying to explore. It be written like the examples below**

Comparative study:

- "Is there a difference in _____(RV)_____ between _____(MV)_____ in the ___(place)_____ during the ___(time)_____?"

- "Is there an effect of _____(MV)_____ on _____(RV)_____ in ___(place/organism)_____ during the ___(time/phenomena)_____?"

Correlative study:

- "Is there a correlation between _____(biotic)_____ and ___(biotic)_____ in the ___(place)_____ during the ___(time)_____?"

- "Is there an association between ____(biotic)_____ and ___(abiotic)_____ in the ___(place)_____ during the ___(time)_____?"

What you will submit: A word document that clearly outlines 2 proposed research questions. This should include a brief description (1-2 paragraphs) of how you plan to carry out the investigation, including the estimated time to complete the investigation.