

## Design Lab Summer Assignment: IB Biology 2015-2016

Name \_\_\_\_\_

Welcome to IB Biology!! The purpose of this summer assignment is to begin work on the internal assessment. You will need to complete the lab worksheet (pages 3 & 4) by the first day of school. You will be designing your own lab, running the experiment, and analyzing the data. The design lab includes all aspects of the IB IA: Personal engagement (2 marks), Exploration (6 marks), Analysis (6 marks), Evaluation (6 marks), and Communication (4 marks). This assignment will focus on the Exploration (lab design/set-up) section.

You will need to pick a biological topic and conduct an experiment within that topic. The experiment MUST follow all ethical and biohazard guidelines. The information below will help you complete the lab worksheet.

**Problem:** should be in paragraph form (referenced as necessary). This should answer the questions: why was this experiment performed? What was the goal of this experiment?

**Research Question:** you will need to come up with a research question. First choose an independent variable and dependent variable and use these to write the question. Research questions are typically written in the form: What is the effect of \_\_\_\_IV\_\_\_\_ on \_\_\_\_DV\_\_\_\_?

**Variables:** you will need to have an independent variable, dependent variable, and controlled variables. In experiments, only one independent variable is allowed. This is the variable that is being manipulated while the dependent variable is the one that is being measured. This is the portion of the experiment that is being affected by the independent variable. Controlled variables are the portions that must remain the same and cannot be altered throughout the experiment.

**Background Information:** this is where you find information that will support your hypothesis and explain why the experiment is conducted in **2-3 paragraphs**. **At least 3** reputable sources must be used and cited in parenthetical citations (Wiggington, 2015). All sources will be listed on a Works Cited page in MLA format. Keep in mind that Wikipedia.com, google.com, and ask.com are NOT reputable sources. Information from a scientific journal, .gov, and .edu sites are reputable. All information must be in your own words and information that is not your original thought must be cited or else it is plagiarism and will result in a **zero**.

**Hypothesis:** the hypothesis is where you state what you think will happen in the experiment. Make an educated guess based on the background research you have done. The hypothesis should be a short paragraph and include a mathematical relationship whenever possible. They are typically written in an if...then...why... statement.

- For example: If \_\_\_\_IV\_\_\_\_ is increased then the \_\_\_\_DV\_\_\_\_ will increase because \_\_\_\_\_  
(parenthetical citation, year).

**Materials:** Make a bulleted list of materials needed for your experiment. This should be specific and include units.

**Safety, Environmental, and Ethical Considerations:** this is where safety, environmental, and ethical concerns are stated. If you use people, animals, bacteria, or any chemicals then you will need to write something in this section.

### ***IB Experimentation policy:***

#### ***Involving live animals:***

*Any planned and actual experimentation involving live animals must be subject to approval by the teacher following a discussion between teacher and student based on the IB guidelines. This discussion should look at the 3Rs principle and the decision justified. The principles are: Replacement, Refinement, and Reduction.*

*If the animal is essential to the investigation refinements to the investigation to alleviate any distress to the animal and a reduction in the numbers of animals involved should be made. Experiments involving animals must be based on observing and measuring aspects of natural animal behaviour. Any experimentation should not result in any cruelty to any animals, vertebrate or invertebrate. Therefore experiments that administer drugs or medicines or manipulate the environment or diet beyond that which can be regarded as humane is unacceptable in IB schools.*

*Involving human subjects:*

*Any experimentation involving human subjects must be with their direct, legally obtained written permission and must follow the above guidelines. In addition, the investigation must not use human subjects under the age of 16 without the written consent of the parents or guardians. Subjects must provide written consent; the results of the investigation must be anonymous; subjects must participate of their own free will; and subjects have the right to withdraw from the investigation at any time. Investigations involving any body fluids must not be performed due to the risk of the transmission of blood-borne pathogens*

**Works Cited page:** includes all sources used, in MLA format, in alphabetical order, and has a hanging indent.

The information above must be found over the summer before school starts. This information will be due on the first day of school and will be counted as the first lab grade of the year... don't start out the year with a zero!

Over the summer, you need to get your topic approved by Ms. Wiggington ([mawiggington@fcps.edu](mailto:mawiggington@fcps.edu)) if you are enrolled in IB Biology SL or Mrs. Corbett ([jlcorbett@fcps.edu](mailto:jlcorbett@fcps.edu)) if you are taking IB Biology HL 2. Keep in mind that this will need to be done earlier rather than later because you need time to complete the required sections that are listed above.

Your email to Ms. Wiggington or Mrs. Corbett will need to include the research question, independent variable, dependent variable, hypothesis, and some general information on how and where you plan to conduct the experiment.

**In addition, workshops will be held on August 18<sup>th</sup> and 19<sup>th</sup> in the Media Center at Robinson from 8 am to 12 pm. Computers will be available along with guidance from either teacher.**

IB Biology Summer Assignment

Name \_\_\_\_\_

Was my topic/experiment approved by Ms. Wiggington or Mrs. Corbett?

Yes      No

Problem

Research Question:

Variables:

Independent variable (include units):

Dependent variable (include units):

Controlled variables (include units):

Background:

Hypothesis:

Materials:

Safety, Environmental, and Ethical Considerations:

Works Cited: