

# IB Summer Assignment

**FYI - THREE PROPOSALS DUE SEPTEMBER 6<sup>th</sup>**

(First day of school Aug 18<sup>th</sup>, IA experimental window October 4-22)

Optional but recommended for HL and SL

## **1. Review Year 1 topics:**

### SL +HL

Topic 1: Cell Biology

Topic 2: Molecular Biology

Topic 3: Genetics

Topic 6.1-6.3: Human Physiology (digestion, circulatory, and immune systems)

### HL Only

Topic 7: Nucleic Acids AHL

Topic 8: Metabolism AHL

Topic 10.1-10.2: Genetics AHL

Topic 11.1: Immunity AHL

### **Still to cover in Year 2:**

Topic 6.4-6.6: Human Physiology (respiratory, nervous, reproductive systems)

Topic 11.2-11.4: Human Physiology ALH (Muscular/Skeletal, excretory, reproductive systems)

Topic 4: Ecology

Topic 9: Plant Physiology

Topic 5: Evolution

Topic 10.3: Evolution AHL

Option A, C, or D.

## **2. IA prep work**

It is strongly recommended that you get a head start on your IA. Three proposals are required by September 1<sup>st</sup>.

For your summer assignment, you will be exploring topics related to biology in order to identify a topic of interest. Don't be afraid of ideas from topics we haven't covered yet (like plants). I'm here to help you refine your question and work out a methodology.

In order to get started, go to the [Science Daily website](#) that contains short articles about new research that is being done. This will provide you with some new and novel ideas to ponder. Please do **NOT** go to science fair websites to research (these usually contain topics that have been frequently done and are not novel).

After you have found a topic of interest you will need to do some research on that topic. In conducting your research you need to focus on Assessment Objective 1 (see below).

When researching your topic of interest, answer the following questions:

1. What topic, problem or issue are you interested in? (Do some background research to find out more about it)
2. What specific part of the topic are you interested in? (Break down topic and group ideas into clusters. Pick one cluster or part of one cluster)
3. List a few possible questions about your specific topic area. (Ask: What? Who? When? Where? Why? How?)
4. Which of the questions from #3 are testable (which one(s) can be tested by experimentation?)
5. Choose one to be your main question.
6. Make your question as clear and specific as possible.

### **EXAMPLE**

I went to the Science Daily website and found this article:

Wake Forest University. "Hold the mustard: What makes spiders fussy eaters." ScienceDaily. ScienceDaily, 15 April 2019. <[www.sciencedaily.com/releases/2019/04/190415105043.htm](http://www.sciencedaily.com/releases/2019/04/190415105043.htm)>. <https://www.sciencedaily.com/releases/2019/04/190415105043.htm>

After reading the article I was curious about what different chemicals could be used to keep spiders out of my house. Therefore, I developed the following topics and question:

**Broad Topic:** Spiders and taste

**Topic:** chemicals that deter spiders

**Question:** What chemicals could act as a spider repellent? (note: this is not my final research question.)

Once you have a question, now it is time to do some research. I want to find out as much as possible about this topic. I have a good start from the article, but now I need to get information.

Some questions I would want to answer are:

1. What are the different types of chemicals that could be used? (and are safe, I do not want to kill the spider, I just don't want him in my house).
2. What biological concepts and processes are involved in this topic?
3. What species of spider could I use? Can I use one that is common in this area? (How do you safely catch spiders in the wild?)
4. How do I safely handle and take care of a spider?
5. How will I test my question? (what will my experiment look like?)

**NOTE: IB has a very strict animal experimentation policy.**

Any investigation involving animals should initially consider the replacement of animals with cells or tissues, plants or computer simulations. 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 animal, 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.

**Also NOTE: IB has a very strict policy involving human test 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
- Subjects have the right to withdraw from the investigation at any time.
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Investigations involving any body fluids must not be performed due to the risk of the transmission of blood-borne pathogens. An exception would be an investigator using their own saliva or sweat.

# THREE PROPOSALS DUE SEPTEMBER 6<sup>ST</sup>

## HLs and SLs

I will link a form on Classroom for your proposals. You have to complete this form THREE times to turn in three DIFFERENT proposals. (This form is for AFTER you've done the process described above)

The form will ask you the following questions:

1. What topic, problem or issue are you interested in? This is your broad topic.
2. Source of inspiration – This can be an article or life experience
3. What biology topics (from syllabus/book) does your idea connect to?
4. What specific part of the topic are you interested in? This is your narrower idea.
5. Formulate a testable question that clearly includes your independent and dependent variables
6. List variables that would need to be controlled
7. Briefly describe a methodology that might work to collect your data.