

AICE Biology Summer Assignment 2019 – Due 1st Day of Class
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1. Syllabus

Download the 2019-2020 AICE Biology Syllabus at

<https://www.cambridgeinternational.org/programmes-and-qualifications/cambridge-international-as-and-a-level-biology-9700/> (It will be the 2019-2021 syllabus)

- Skim the entire AICE Biology syllabus.
- Content Units 1 – 11 will be the focus of this class.

2. Journal Article Summary

As you may have experienced in your introductory class, biology involves a lot of basic memorization. Mastery of facts within a framework of unifying themes (i.e. evolution, structure and function, energy) is important. More important still is the realization that science is a process. Those facts are the fruits of someone's research. Science as a process demands creative and critical thought. How does one hone creative and critical thought? The answer:

Read. Read. Read. (And visit a library! And write!)

To this end I am asking you prepare a 1 page, double-spaced, 12 point font article summary. The summary should address two ideas: What? (What is the article about? Summarize, in your own words, the essential points.) and So what? (Analyze the merit of the science. Was the scientific design sound? What are the implications of the findings to the field and to society at large?).

Your article may cover an area of special interest to you, but must be pertinent to biology. Select an article of scientific value from respected journals such as *Bioscience*, *Nature*, *Science*, *Natural History*, *Discover*, *Scientific American*, *Journal of American Medicine*, etc. Do not use anonymous web articles, popular newspapers or magazines such as *National Geographic*. You may need to visit a library to access these articles!

Review the following rubric for further guidance:

Requirement	Point Value
Copy of article submitted. Article is at least 1 page long from respected scientific journal. Article published after 2003.	1
“What”: Clear and concise 2-3 paragraph summary in one's own words. No copied passages. Reader should not have to consult actual article for understanding.	4
“So what?”: Evidence of critical reflection and evaluation regarding significance of article findings. Avoid over-simplified statements such as “This discovery will help all mankind.”	4
Format: <ul style="list-style-type: none">• Typed, double-spaced, 12-point font, 1 inch margins• Name, Date, AICE Biology, Class Period in upper right corner• Article citation information (MLA format) as a centered title• No more than 1 page (strictly enforced!)	1

3. Biological Molecules Notes

On a separate paper prepare personal notes (typed, hand-written, color-coded, diagram-rich—make these notes work for you) addressing the * items. Use outside references like the Internet, library resources, and reference books. Be ready for a quiz on this material (not on the first day of class).

I. Inorganic Chemistry

A. Water –The Universal Solvent

*Describe and explain the roles of water in living organisms and as an environment for living organisms.

B. Essential Ions

*State **one role** of each of the following inorganic ions in living organisms: calcium, sodium, potassium, magnesium, chloride, nitrate, phosphate

II. Organic Chemistry

A. Carbohydrates

*Draw and label the ring forms of alpha and beta glucose. Number the carbons.

*Use an annotated diagram to describe the formation and breakage of a glycosidic bond.

*Describe the molecular structure of starch (amylose and amylopectin), glycogen, and cellulose and relate these to their function. [A table may help here]

B. Lipids

*Draw and label a triglyceride and a phospholipid. Relate these structures to their functions in living organisms. Be sure to cover the connection to energy.

C. Proteins

*Draw the structure of a generic amino acid.

*Explain the formation and breakage of a peptide bond. [A diagram may help]

*Explain the meaning of the terms *primary*, *secondary*, *tertiary*, and *quaternary structure* of proteins and describe the type of bonding (hydrogen, ionic, disulphide and hydrophobic interactions) that hold the molecule in shape. [A table may help]

* Define the term “enzyme”.

Questions?

As an upper-class student it is YOUR responsibility to contact me with questions. Please email concerns to johnsoea@pwcs.edu. Have a safe and enjoyable summer.