Overview: AP Biology is a college-level course that will require you to have a foundational knowledge of biological concepts. This summer assignment will prepare you for the course by familiarizing you with the course framework, prepping you with key vocabulary, and providing you with a real-life context of science concepts. Your summer assignment consists of three parts and will count as a project grade for the class. Everything is due the first week of school.

<table>
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<tr>
<th>Assignment</th>
<th>What will be graded?</th>
<th>% of Project Grade</th>
<th>Approx. Time Needed</th>
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<tr>
<td>Part I Explore Framework</td>
<td>Responses to Questions</td>
<td>20%</td>
<td>1-2 hours</td>
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<tr>
<td>Part II Vocabulary</td>
<td>Quiz during 1st Week of School</td>
<td>40%</td>
<td>3-4 weeks of studying</td>
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<tr>
<td>Part III Book Study</td>
<td>1-page Reflection</td>
<td>40%</td>
<td>1-2 weeks of reading</td>
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Section 1: Explore the AP Biology Curriculum Framework

Please click the following link to review the AP Biology Curriculum Framework.


You may print these 2 pages, or you may write your answers on your own sheet of paper.

I. Review the four Big Ideas around which the course is centered as described in the curriculum framework. Review the contents page of the curriculum framework, and identify two parts that you feel will help you be successful in the class. Justify your choices.

II. Answer the following questions:
   1. When material is marked with an X, what does this mean?
2. How many Essential Knowledges does each Big Idea contain?

3. What is the difference between an Essential Knowledge and a Learning Objective?

4. Based on your review of the course requirements, do you feel AP Biology is more factual or conceptual? Justify your answer with specific references from the framework.
### Section 2: Essential Vocabulary

Below is a list of basic vocabulary terms that you need to know by the beginning of the course. You will be tested on these terms within the first week of school. You should be able to identify examples and use the vocabulary terms in context. Memorizing definitions will not be sufficient!

#### Experimental Design

1. Positive Control  
2. Negative Control  
3. Independent Variable  
4. Dependent Variable  
5. Manipulated Variable  
6. Responsive Variable  
7. Hypothesis  
8. Model Organism

#### Unit 1: Chemistry of Life

1. Amino Acid  
2. Protein  
3. Monosaccharide  
4. Disaccharide  
5. Carbohydrate  
6. Nucleotide  
7. Nucleic Acid  
8. Lipid  
9. Fatty Acid  
10. Phospholipid  
11. Hydrolysis  
12. Denaturation  
13. Monomer  
14. Polymer  
15. Macromolecule  
16. Enzyme

#### Unit 2: Cell Structure and Function

1. Prokaryote  
2. Eukaryote  
3. Homeostasis  
4. Active Transport  
5. Passive Transport  
6. Osmosis  
7. Facilitated Diffusion  
8. Endocytosis  
9. Exocytosis  
10. Concentration Gradient  
11. Selective Permeability  
12. Tonicity (hypertonic, isotonic, hypotonic)  
*You should also know cellular organelles (nucleus, cytoplasm, cell membrane, cell wall, chloroplasts, lysosome, Golgi Body, Endoplasmic Reticulum, vacuole, ribosome, and mitochondria).

#### Unit 3: Cellular Energetics

1. Photosynthesis  
2. Cellular Respiration  
3. ATP/ADP Cycle  
4. Carbon Cycle  
5. Krebs Cycle  
6. Electron Transport Chain  
7. Glycolysis  
8. Light-Dependent Reactions  
9. Calvin Cycle  
10. Aerobic  
11. Anaerobic  
12. Fermentation

#### Unit 4: Cell Cycle

1. Mitosis  
2. Nuclear Division  
3. Cell Cycle  
4. Somatic Cell  
5. Prophase  
6. Metaphase  
7. Anaphase  
8. Telophase  
9. Cytokinesis  
10. Binary Fission  
11. Diploid  
12. Chromosome
### Unit 5: Heredity

| 7. Nondisjunction              | 15. Dominant            |                      |

### Unit 6: Gene Expression and Regulation

| 1. DNA                         | 8. Translation          | 15. tRNA                |
| 3. Double Helix                | 10. Amino Acid          | 17. Protein Synthesis   |
| 7. Transcription               | 14. Ribosome            |                      |

### Unit 7: Natural Selection


### Unit 8: Ecology

Section 3: Book Study

Choose **ONE** of the books listed below:

- *Your Inner Fish*, Neil Shubin
- *The 6th Extinction*, Elizabeth Kolbert
- *Serengeti Rules*, Sean B. Carroll
- *Silent Spring*, Rachel Carson
- *The Demon in the Freezer*, Richard Preston

All of these books are available for purchase online and range in price from $8-$15, or you can get a copy from your local library. You are not required to bring your copy of the book to class with you! 😊

Write a **one-page, single-spaced** reflection that shows evidence of comprehension of your chosen book.

*Please read the book and write an honest reflection! Do not plagiarize this assignment!!!*  
*There will be a follow-up activity during the first week of school, and it will be obvious if you did not read.*

**Be sure to include the following:**

- Title and Author of your book. What was the author’s purpose in writing this book?
- Give an overall summary of your book. To which of the 4 Big Ideas of AP Biology does this book relate?
- Discuss how your viewpoints have changed or strengthened while reading your book.
  - Is there anything new you learned that you are excited to learn more about this year?
  - Are there any topics mentioned that you didn’t quite understand?
  - Can you think of a current or recent event that relates to the book?