

*Honors Biology II*  
*Introduction and Summer Work for SY 2017-2018*

**Assignment #1 - Join the Honors Biology II 17-18 Google Classroom**

We will be using Google Classroom to submit your Summer work and also throughout the year. I will use Classroom to communicate with the class, to post helpful information and links, and for assigning/collecting work.

I strongly suggest that you install the Classroom App on your phone if you haven't already, and enable notifications. You'll link the Classroom App to your "spsd.us" Google account.

To join our Google Classroom:

- Log into your spsd.us Google account.
- Click Classroom icon in your "waffle" in the upper right corner of your screen, or go to website directly by typing the url: [classroom.google.com](https://classroom.google.com)
- In the upper right corner of your Classroom homepage, there is a plus "+" sign. Click on this, and select "Join Class".
- Use this class code to join the Honors Bio II 17-18 Classroom: **7edpe7v**

**Due Date: Thursday, June 22, 2017**

When you join our Google Classroom, download the rest of your Summer Assignment. Email me at [rmichaels@spsd.us](mailto:rmichaels@spsd.us) if you have any questions or problems.

*Honors Biology II*  
*Introduction and Summer Work for SY 2017-2018*

Honors Biology II is an intensive, in-depth look at biological systems. This is a college-level course intended for juniors and seniors. You will also have the opportunity to obtain college credit through Fairleigh Dickinson University. If you are looking for an easy A, this is not the course for you!

Attached, you will find your Summer Assignment. It is necessary to complete summer work to refresh your memory of Biology and allow us to get a running start in September. Please take this seriously, as these assignments will be your first grades in Honors Biology II. If you have questions regarding this assignment, you can email me at [michaels@spcd.us](mailto:michaels@spcd.us)

Summer Assignments are attached.

Required materials for Honors Biology II:

1. Notebook – either 3-ring binder or spiral.
2. Folder and/or binder for loose handouts and returned work
3. Colored pencils or pens in different colors – very helpful in drawing and labeling diagrams, and making important notes stand out.

**Assignment #1 - Join the Honors Biology II 16-17 Google Classroom**

Instructions & due date provided by Mrs. Michaels when you picked up your textbook.

**Assignment #2 - Introductory Email**

Your first summer assignment will be to send me an email to allow me to begin to get to know you.

You should use your spsd.us email account for these communications. Your address is your graduation year, first initial, last name@spsd.us. Your password for this account is "School\*\*\*\*" where \*\*\*\* is your student number. The "S" in "School" must be capitalized.

For example: Email address: [17keverteer@spsd.us](mailto:17keverteer@spsd.us) Password: School7746

**Due Date: Friday, June 23, 2017**

Your email needs to adhere to the following rules (*borrowed from Mrs. Kim Foglia, Levittown, NY*)

- a. Use clearly written, **full sentences**. Do not abbreviate words like you are texting your friend! Use spell check! This is a professional communication like you would have with a college professor, so let's practice for your rapidly nearing future.
- b. Address it to me at: [rmichaels@spsd.us](mailto:rmichaels@spsd.us)
- c. Make the **Subject**: "Honors Bio II: Introduction to <Insert your name here>" (Do **not** include the quote marks or the brackets, just the words)
- d. Begin the email with **formal salutation**, like "Mrs. Michaels," or "Dear Mrs. Michaels,"
- e. Now introduce yourself (your name) and tell me a little about yourself, like:
  - ❖ What do you like to do (hobbies, sports, music, interests, etc.)?
  - ❖ Do you have a job?
  - ❖ Tell me a little about your family (Mom? Dad? Guardian? Siblings? Pets?) What do your parents do for a living?
  - ❖ Was there anything you liked about your previous biology class?
  - ❖ What was the last book you read for fun?
  - ❖ What are you looking forward to the most in Honors Biology II?
  - ❖ What are you most anxious about in Honors Biology II?
- f. End the email with a **formal closing**: "Cordially", "Sincerely", "Best Regards", etc. and add your name as if you signed a letter.

**Assignment #3 - Biology Collection**

(also borrowed from Mrs. Foglia)

For this part of your summer assignment, you will be familiarizing yourself with science terms that we will be using at different points throughout the year. On the next page, you will find the list of terms.

1. **Select 20 terms**

❖ **Define 10 of these terms in a Google Doc and submit it in Classroom.**

❖ **“Collect” 10 other items from this list of terms.**

When I say “collect”, I mean you should collect that item by finding it and taking a **photograph** of that item. You do not need to find the exact item on the list – say for example, if it is an internal part of an organism, but you must apply the term to the specimen you find and explain how this specimen represents that term.

Create a Google Slides presentation. Each slide should have:

- the term & definition
- the photo
- explanation of how the photo represents the term.

❖ **Example**

If you choose the term “**phloem**”, you could submit a photograph you have taken of a plant leaf or a plant stem and then explain *what* phloem is and specifically *where* phloem is in your specimen.

2. **Requirements:**

❖ **Original Photos Only:** You cannot use an image from any publication or the Web. You must have taken the photograph yourself. The best way to prove that is to place an item in all of your photographs that only you could have added each time, something small like a coin, action figure, keys, etc....

❖ **Natural Items Only:** Some specimens may be used for more than one item, but all must be from something that you have found in nature. Take a walk around your yard, neighborhood, and town. **DON'T SPEND ANY MONEY!** Research what the term means and in what organisms it can be found....and then go out and find one!

3. **Team Work:**

You may work with other students in the class to complete this project, but **each student must turn in his or her own project with a unique set of terms chosen.**

There are 96 choices....probability says there is a very small chance that any two students will have most of the same 20 terms chosen.

**Due Date: All definitions & photos should be submitted by Friday, September 8, 2017 at 7:30 am**

**BIOLOGY COLLECTION TERMS**

- |                            |            |
|----------------------------|------------|
| 1. adaptation of an animal | 47. lichen |
| 2. adaptation of a plant   | 48. lignin |

3. actin
4. amniotic egg
5. amylase
6. angiosperm
7. animal that has a segmented body
8. annelid
9. anther & filament of a stamen
10. arthropod
11. autotroph
12. Batesian mimicry
13. bilateral symmetry
14. Calvin cycle
15. carbohydrate – fibrous
16. cambium
17. cellulose
18. chitin
19. cnidarian
20. coelomate
21. connective tissue
22. cuticle layer of a plant
23. deciduous leaf
24. deuterostome
25. echinoderm
26. ectotherm
27. endotherm
28. epithelial tissue
29. eukaryote
30. exoskeleton
31. fermentation
32. flower ovary
33. fruit – dry with seed
34. fruit – fleshy with seed
35. gametophyte
36. gastropod
37. glycogen
38. gymnosperm cone
39. heartwood
40. hermaphrodite
41. insect
42. K-strategist
43. keratin
44. leaf - angiosperm
45. leaf - gymnosperm
46. lepidoptera
49. lipid used for energy storage
50. littoral zone organism
51. long-day plant
52. meristem
53. modified leaf of a plant
54. modified root of a plant
55. modified stem of a plant
56. muscle fiber - striated
57. mutualism
58. mycelium
59. myosin
60. nematode
61. nymph stage of an insect
62. parasite
63. parenchyma cells
64. phloem
65. pine cone - female
66. platyhelminthes
67. pollen
68. pollinator
69. porifera
70. prokaryote
78. protein - fibrous
79. protein - globular
80. protostome
81. pupa stage of an insect
82. r-strategist
83. radial symmetry
84. rhizome
85. animal with two-chambered heart
86. animal with three-chambered heart
87. sporophyte
88. stem - herbaceous
89. stem - woody
90. stigma & style of carpel
91. tendril of plant
92. thorn of a plant
93. unicellular organism
94. vascular plant tissue
95. xerophyte
96. xylem

#### Assignment #4 - Chapters 1 & 2

This packet contains questions (referred to ever after as your Key Concept Questions, or KCQs) pertaining to Chapters 1 & 2 of your textbook.

**Answer the questions on separate paper, and in complete sentences. You may type your answers if you prefer.** Please note that the figures and diagrams in your text contain much

valuable information – make sure to fully examine them as you read. You will be tempted to just search out the answers to the questions, but it is to your distinct advantage to read the entire chapter! Some of these questions can be answered simply by reading the text; others will require you to make connections and inferences about what you have read. Concept checks are very helpful, with answers in appendix A

You will be learning the material in Chapters 1 & 2 on your own, in preparation for a test during the first weeks of school.

**Due Date:** I will check the KCQs for completion on the first day of school - Thursday, 9/7/17. On 9/7 and 9/8 we can go over any questions you may have. You will turn the KCQs in when you take the first test. I expect the first test to be on 9/15.

### Chapter 1: Exploring Life

1. What is Biology?
2. What are the characteristics of living things as shown in Figure 1.2?
3. Explain the hierarchy of biological organization as shown in Figure 1.3.
4. Contrast producers and consumers.
5. What is the difference between how nutrients and energy pass through an ecosystem?
6. What is a cell?
7. How does DNA direct the activities of the cell?
8. How did scientists get a bacterial cell to produce human insulin?
9. Define genome.
10. Distinguish between eukaryotic cells and prokaryotic cells.
11. What are emergent properties? Give an example.
12. Compare reductionism with systems biology. How is each one a valid way of understanding biological systems? How do these two approaches complement each other?
13. How does a negative feedback loop work? Give an example.
14. How does a positive feedback loop work? Give an example.
15. How many species have been identified and named? How many more species do scientists estimate are as yet undiscovered?
16. What changes have recently been made to the traditional 5-kingdom classification system?
17. What are the three domains, and what types of organisms do they contain?
18. What do the cilia of *Paramecium* and the cilia of the human windpipe have in common?
19. Name Darwin's famous work. What year was it published?
20. What were Darwin's two main points?
21. Summarize Darwin's idea of natural selection.
22. Explain how the Galapagos finches could have developed from a single South American ancestral species.
23. What is our evolutionary connection to ancient prokaryotes?
24. What is the basis for discovery science?
25. What is inductive reasoning? Give an example of a conclusion reached through inductive reasoning.
26. What is the basis for hypothesis-based science?
27. What is deductive reasoning? Give an example of a conclusion reached through deductive reasoning.
28. What are the two requirements for a valid hypothesis?
29. How could predators "know" not to attack a coral snake?
30. Summarize the experimental design and results of Pfennig and Harcombe's snake experiment.
31. How do researchers control variables?

32. What is the difference between the word *theory* in everyday language, and the word *theory* in science?
33. What is the usefulness of models in science?
34. What is the difference between science and technology?
35. What are some of the ethical concerns that go along with increasing technological innovations?
36. What are the biological themes that we will study throughout our text?

## Chapter 2: The Chemical Context of Life

1. How does the bombardier beetle defend itself?
2. What is matter?
3. Distinguish between weight and mass.
4. How is sodium chloride an example of an emergent property?
5. What are trace elements
6. Define atom. What are atoms made of?
7. Distinguish between atomic number and mass number.
8. What is the difference between the three isotopes of carbon?
9. How can researchers utilize radioactive isotopes?
10. What affects the amount of potential energy electrons have?
11. What happens when an electron absorbs energy? What happens when an electron releases energy?
12. What is the importance of valence electrons?
13. Why are orbitals a better description of electron location than the electron shell?
14. How does a covalent bond form?
15. What is the difference between a structural and a molecular formula? Give an example of each.
16. What is electronegativity?
17. Distinguish between polar and nonpolar covalent bonds. Give an example of a molecule containing each.
18. How does an ionic bond form?
19. Define: ion, cation, anion
20. How does a hydrogen bond form?
21. What are van der Waals interactions?
22. Why is the shape of a molecule such an important consideration?
23. What is the difference between reactants and products in a chemical reaction?
24. What does it mean if a reaction goes to completion?
25. What is dynamic equilibrium?