

Fulton Science Academy Private School

AP Biology

Summer Assignment 2020

Welcome to AP Biology! This course is designed to be the equivalent of a two-semester introductory biology course usually taken in the first year of college. In other words, it is a little like drinking from a fire hydrant. It will be a rewarding experience, but as with most things that are, it will also be challenging.

The AP Biology Summer Assignment is due no later than **08-10-20**. The AP Biology Summer Assignment will count as your first test grade. If you have any questions, please feel free to email me. My email address is **skarp@fultonscienceacademy.org**.

Sincerely,

Sheldon Karp

Your Inner Fish by Neil Shubin

Your Inner Fish may be ordered on Amazon.

https://www.amazon.com/Your-Inner-Fish-Journey-3-5-Billion-Year/dp/0307277453/ref=sr_1_2?crd=2Q0OFU6N0N94N&keywords=your+inner+fish&qid=1559197704&s=gateway&srefix=your+inner%2Caps%2C139&sr=8-2

Directions:

- Answer all discussion questions using complete sentences.
- Hand-write all answers in blue ink.
- Skip two lines between each answer.
- Only write on one side of each page.
- Summer Assignment is due on 08-10-20.

Discussion questions

Chapter 1 - Finding Your Inner Fish

1. In general, what are three challenges faced by a field paleontologist?
2. What is the significance of the Tiktaalik discovery to science? What is the significance of the Tikaalik to everyday people in society?

Chapter 2 - Getting A Grip

1. What did Sir Richard Owen discover and what was Darwin's explanation?
2. How do we know some fish did push-ups? What is the evidence?
3. When did most of the major human bones appear and in what creatures?

Chapter 3 - Handy Genes

1. How does a developing body "make" hands?
2. What is Sonic hedgehog and why it is important?
3. As asked in this chapter, "how deep is our connection to the rest of life"?

Chapter 4 - Teeth Everywhere

1. Why are paleontologists excited to find teeth in the fossil record? Name three pieces of information paleontologists can learn from fossil teeth.
2. Teeth are not always easy to find in the fossil record. List three "tips" for searching for fossil teeth.
3. What is (or what do we think is) a conodont? What have we found of them in the fossil record? How do we think they lived or functioned?

Chapter 5 - Getting Ahead

1. In your own words, describe the fundamental blueprint for the head.
2. What is the pattern similarity between shark and human skulls?
3. Why do college professors instruct about Amphioxus? Why bother learning about this creature?

Chapter 6 - The Best Laid (Body) Plans

1. Explain the following terms: ectoderm, mesoderm, and endoderm. What role do each play in embryo development?
2. What is the Organizer and what is its importance?
3. What are the Hox and Noggin genes? What role do they play?

Chapter 7 - Adventures in Body Building

1. Describe what skeletal bone looks like and what it is composed of at a microscopic level and a macro- microscopic level.
2. If your friend calls you a 'blob', how far off is he/she from the truth? Discuss the similarities and differences between you and a 'blob'.

Chapter 8 - Making Scents

1. Describe the nostrils of Tiktaalik. Could this fish have smelled? Justify your answer. Refer to the section on how humans smell. This might help formulate your response.
2. What was the significance of Buck and Axel's work besides winning a Nobel Prize?
3. Why do you think humans evolved so many genes for odor? Support your thoughts with information from the book.

Chapter 9 - Vision

1. Describe the development of color vision. Why is this a significant development in mammal evolution?
2. What are the differences between the two types of animal eyes?
3. How is it possible for us to grow extra eyes on organisms, making them look like "mutants" to us?

Chapter 10 - Ears

1. Describe the basic internal structure of the ear. What are the different ways the ear has developed outside the body of mammals, reptiles, etc.
2. Describe the different parts of the inner ear and their purpose/function.
3. What is the purpose/function of the Pax 2 gene? Can it be found in jellyfish? Explain.

Chapter 11 - The Meaning of It All

1. Do you agree with the "law of everything?" Will this hold true in the future? Do clones even have parents? Explain.
2. How has DNA technology advanced the reconstruction of one-living and currently living organisms?
3. Why does history "make us sick?"