AP Biology Summer Assignment 2018-2019

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Summer isn't just for exploring the great outdoors and becoming one with nature but it is also a time for kicking back, relaxing, and catching up on a little reading. So, that is what we are going to do this summer. I would like you to read about some of the experiments done by pioneers in the field of ethology. Konrad Lorenz and Niko Tinbergen are the founders of this field and along with Karl von Frisch, shared the Nobel Prize in 1973. For the second part of your summer assignment, you will be reading *Your Inner Fish* by Neil Shubin. This book addresses the core themes of the AP Biology curriculum:

Evolution
Regulation
Continuity and Change
Energy Transfer
Science as a Process Science, Technology, and Society
Interdependence in Nature
Relationship of Structure to Function

Please write thoughtful responses to these questions—typed please. If you have any questions, feel free to email me at sscudder@henry.12.ga.us. Assignments are due the first day of class.

Part 1: Complete the reading guide over Animal Behavior using the video link below and the chapter provided. The reading guide is found at the end of this document.
https://www.youtube.com/watch?v=eNjzwfQVcZM

Part 2: For each chapter in the book, complete either project 1 or project 2. You must do ALL of project 1 or ALL of project 2, you cannot pick and choose chapter assignments between the two options. These ideas will be incorporated into your second quiz, so make sure you are familiar with the concepts on your return to school.

- Project 1: During the assigned reading, *Your Inner Fish*, students will find a relationship between the graphic image and the text. (Images found on pages 3-5)
  – In 3 to 4 sentences describe how the graphic relates to the reading in the chapter. Use at least 2 specific facts/quotes from the chapter to support your responses. Include page and paragraph where the quote can be found.
- Project 2: After reading the chapter, consider the statement and dispute it using the text.
  – Find two quotes from the chapter that dispute the disputable question and explain why. Include the page and paragraph where the quote can be found. (Quotes found on page 2)

Disputable Statements (For Part 3, project 2)

Definition of dispute - A disagreement, argument, or debate (keep this in mind when you are discussing each statement)

Chapter 1 Finding Your Inner Fish
Dispute: Most living organisms fossilize after death, so fossils in exemplary condition are easily found all over the world.

Chapter 2 Getting a Grip
Dispute: Humans and fish are nothing alike: we have hands with fingers, they have fins.

Chapter 3 Handy Genes
Dispute: Each cell in a human body contains a unique set of DNA. This allows some cells to build muscle or skin and some cells to become arms versus fingers.

Chapter 4 Teeth Everywhere
Dispute: Teeth evolved through time, after bones, as they became a beneficial adaptation for protection against predation.

Chapter 5 Getting Ahead
Dispute: Humans and sharks both have four gill arches as embryos, but the germ layers and arches develop into unrelated structures in each organism.

Chapter 6 The Best-Laid (Body) Plans
Dispute: Scientists work in isolation: it is counter-productive to repeat another scientist's experiments or to consider research that is not directly related to the organism you are studying.

Chapter 7 Adventures in Bodybuilding
Dispute: All tissues in the human body are made of similar cells that connect to each other in similar fashion.

Chapter 8 Making Scents
Dispute: There are few genes dedicated to olfactory sense and they are similar in all organisms capable of detecting smell.

Chapter 9 Vision
Dispute: All organisms with vision have similar eyes and similar vision genes.

Chapter 10 Ears
Dispute: In humans, eyes and ears function independently of one another; sensation in one does not affect sensation in the other.

Chapter 11 The Meaning of It All
Dispute: Maladies of the human body are not related to our evolutionary past.

Graphic Images (For Part 2: Project 1)

Chapter 1 Finding Your Inner Fish

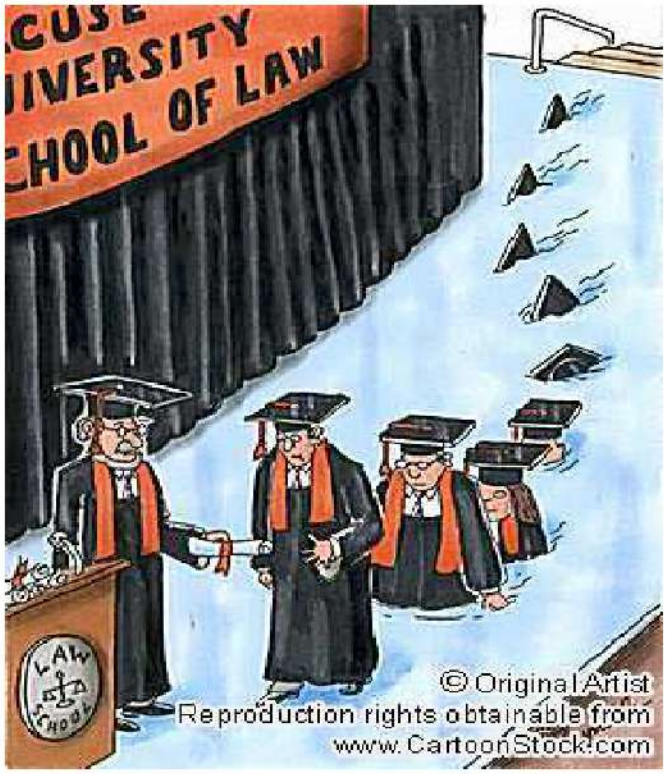
Chapter 2 Getting a Grip

Chapter 3 Handy Genes

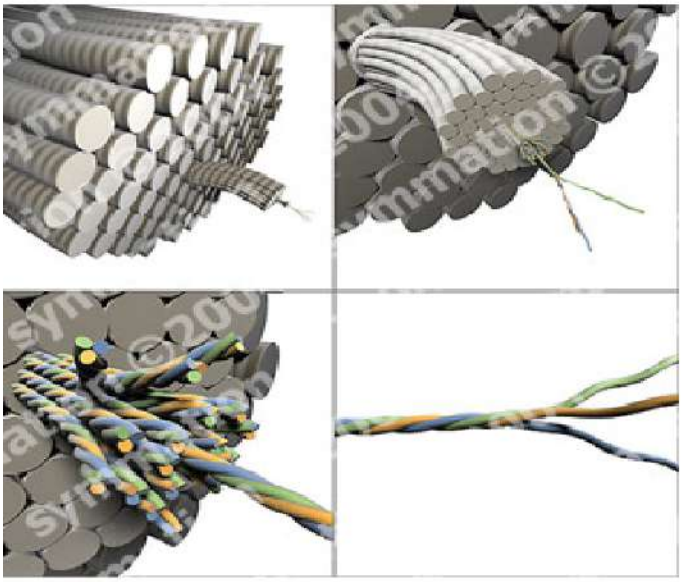
SONIC HEDGEHOG GENE

Chapter 4 Teeth Everywhere

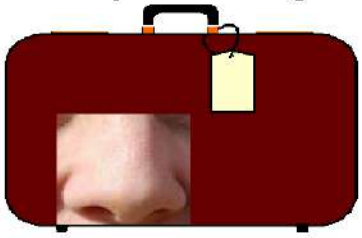
Chapter 5 Getting Ahead



Chapter 7 Adventures in Bodybuilding

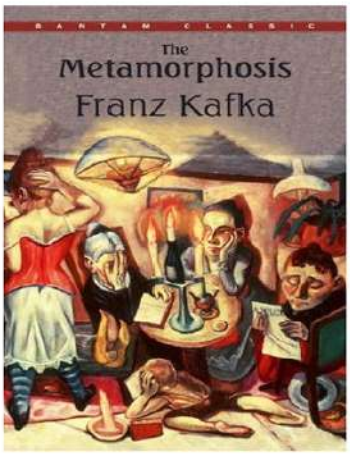


Chapter 8 Making Scents



Chapter 6

Chapter 9 Vision



Chapter 10 Ears

Chapter 11 The Meaning of It All

Chapter 6: The Best-Laid (Body) Plans

• FOR OLD-FASHIONED • Chocolate Chip Cookies (With Variations)
• 2 1/4 cups flour
• 1 teaspoon baking soda
• 1 teaspoon salt
• 1 cup butter, softened
• 3/4 cup granulated sugar
• 3/4 cup packed brown sugar
• 1 teaspoon vanilla
• 2 eggs
• 2 cups semi-sweet chocolate chips (12 oz.)
• 1 cup chopped nuts (optional)

• FOR THIN, CHEWY COOKIES: Reduce granulated sugar to 1/2 cup and increase packed brown sugar to 1 cup.
THICK, CHEWY, OLD COOKIES:
Use half the amount of butter called for and drop by well-rounded tablespoon onto ungreased baking sheets. Bake in preheated 350 degrees oven for 9 to 12 minutes or until lightly browned. Store in airtight container to prevent drying.
• FOR PUFFIER COOKIES: Reduce butter to 1/2 cup and add 1/2 cup solid shortening.
• FOR SOFT CAKEY COOKIES: Omit the granulated sugar and use 3/4 cup butter, 1 cup packed brown sugar and 3 eggs. Drop by well-rounded
For more rounded cookie, do not flatten before baking; bake 9 to 11 minutes.
CRISPIER 1/2 cups flour, 1 1/4
cups granulated sugar, 1/4 cup packed brown sugar and 1 egg. Drop by rounded tablespoon onto ungreased baking sheets. Flatten with bottom of glass dipped in water. Bake in preheated 375 degrees oven for 9 to 11 minutes.

Name: _____ Date: _____ Period: _____

AP Biology Chapter Reading Guide
Behavioral Ecology

1. Define behavior.
2. Differentiate between proximal and ultimate causes.
3. Explain what is meant by "nature versus nurture":
4. Define the following terms and provide an example:
    a. Fixed action pattern (FAPs)
    b. Sign stimulus
    c. Learning
    d. Habituation
5. What is imprinting?
    a. What is the "sensitive period"?
6. What is associative learning? Provide an example.
7. Differentiate between classical and operant conditioning. Which scientists are associated with each of these?
8. Describe how each of the following experiments contribute support to the hypothesis that behavior has a <u>genetic</u> basis:
    a. Lace wing insects:
    b. Migration:
9. Explain each of the following types of communication and provide an illustrative example for each:
    a. Chemical communication
    b. Auditory communication
        i. What are THREE advantages to auditory communication over other forms?
    c. Visual communication
    d. Tactile communication

10. What does the term "fitness" mean in behavioral biology?

11. Name three ways organism's behavior can increase the fitness of the species.

12. Explain how the maternal behavior observed in mice can affect behavior of the offspring:

13. Describe the optimal foraging model

14. Explain polygamy and provide an illustrative example of this behavior. What are the benefits of this behavior?

15. Explain monogamy and provide an illustrative example of this behavior. What are the benefits of this behavior?

16. What is sexual selection? What are the benefits and costs of this behavior?

17. What are the benefits for animals living in a group? Provide an example.

18. What are the disadvantages of living in a group? Provide an example.

19. Describe altruistic behavior using an example.

20. Explain the term inclusive fitness and provide an example.