

Name: _____ Period: _____ Date: _____

Biology Core Concepts: Student Learning Guide

Getting to the tutorials.

- Go to learn-biology.com. Use the menu from your course to find “Biology: Core Concepts”
- Start with “Biology’s 4 Big Ideas”
- If you’re submitting this electronically to your instructor, please type your answers in **blue**, **red**, or any other color your instructor suggests.
- As you go, click to change the ☐ to a ☒

I. AP Biology Themes and Big Ideas.

- ☐ 1. Watch the video “Biology’s 4 Big Ideas.” Then complete the reading that follows. When you get to the flashcards, sign in, and do your best. Then complete the fill-in-the-blanks quiz. Put a checkmark in the box when you’re finished.

CHECKING UNDERSTANDING:

Write short descriptions of each of biology’s big ideas:

- Evolution
- Systems and system interactions
- Information flow
- Energy and Matter Flow

2. Click the link for “Properties of Living Things.”

II. Properties of Living Things

- ☐ 1. Read the introduction.
- ☐ 2. Complete the interactive reading: “Eight Properties of Living Things.”
3. Complete the “Flashcards: Eight Properties of Living Things.” Repeat these flashcards as many times as you want until you’re satisfied with your score. Note that all you’re being graded on is completion (so be honest if you can’t define a term, and click “Need More Practice”).

- ☐ 4. Complete the “Properties of Living Things” Matching Quiz.

5. TOTAL RECALL

In the space below, *without looking at notes or the webpage*, try to list as many of the properties of living things as you can. Write small!

6. Click the link for “Structure Determines Function”

III. Structure Determines Function

1. Summarize the introduction.

2a. Describe the structure/function relationship in the needle nose pliers. Check your answer and correct/amend as necessary.

2b. Describe the structure/function relationship in the hand saw. Check your answer and correct/amend as necessary.

2c. Describe the structure/function relationship in the wrench. Check your answer and correct/amend as necessary.

- ☐ 3a and b. Read about the structure/function relationships in the human hand and in human teeth.
- 3c. Describe the structure/function relationship in the bat's wings. Check your answer and correct/amend as necessary.

3d. Describe the structure/function relationship in the bat's ears. Check your answer and correct/amend as necessary.

3e. Describe the structure/function relationship in the talons of a bird. Check your answer and correct/amend as necessary.

3f. Describe the structure/function relationship in the feet of a duck. Check your answer and correct/amend as necessary.

APPLICATION: Use or imagination (or look around your classroom). Describe another structure/function relationship in the biological world.

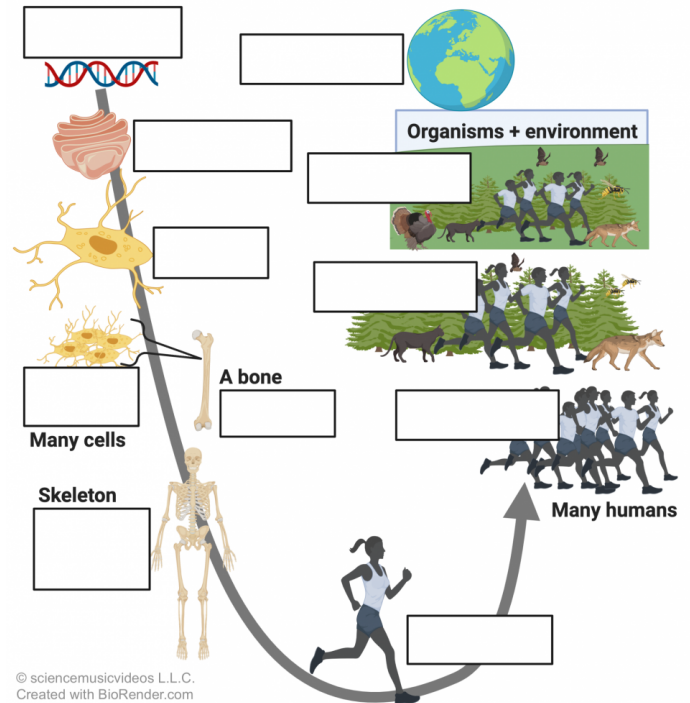
Click the link for "Levels of Biological organization"

IV. Levels of Biological Organization

- ☐ 1. Read the introduction
- ☐ 2. Complete the "Levels of Biological Organization Vocabulary Matching."
- ☐ 3. complete the "Levels of Biological Organization Flashcards"

Checking Understanding

Label the diagram below.



Click the link to proceed to "Understanding Controlled Experiments."

V. Understanding Controlled Experiments

- ☐ 1. Do the matching activity for an introduction to (or a review of) the steps of the scientific method. Study the list as much as you need to. Check the box below when you are sure you know all the terms.
- ☐ 2. Complete the "Interactive Reading: A case study: The Link Between Cancer and Smoking." Check the box below when you're done.

SUMMARIZE: Write a very brief summary of what you learned in this section.

- ☐ 3. Read "Controlled Experiments: General Features. When you finish, take the multiple choice quiz (with the same title).
- ☐ 4. Work on the flashcards that cover the vocabulary about the scientific method and controlled experiments. Be very strict with yourself. Only mark

“Got it” if you really understand the term. Otherwise, give yourself more practice.

- ☐ 5. Read “A controlled experiment to test the smoking/cancer connection. Most of this reading is in the form a multiple choice quiz. Click the box when you’re done.

- ☐ 6. Read “What Happened Next”

Write a brief summary of what you learned in this section.

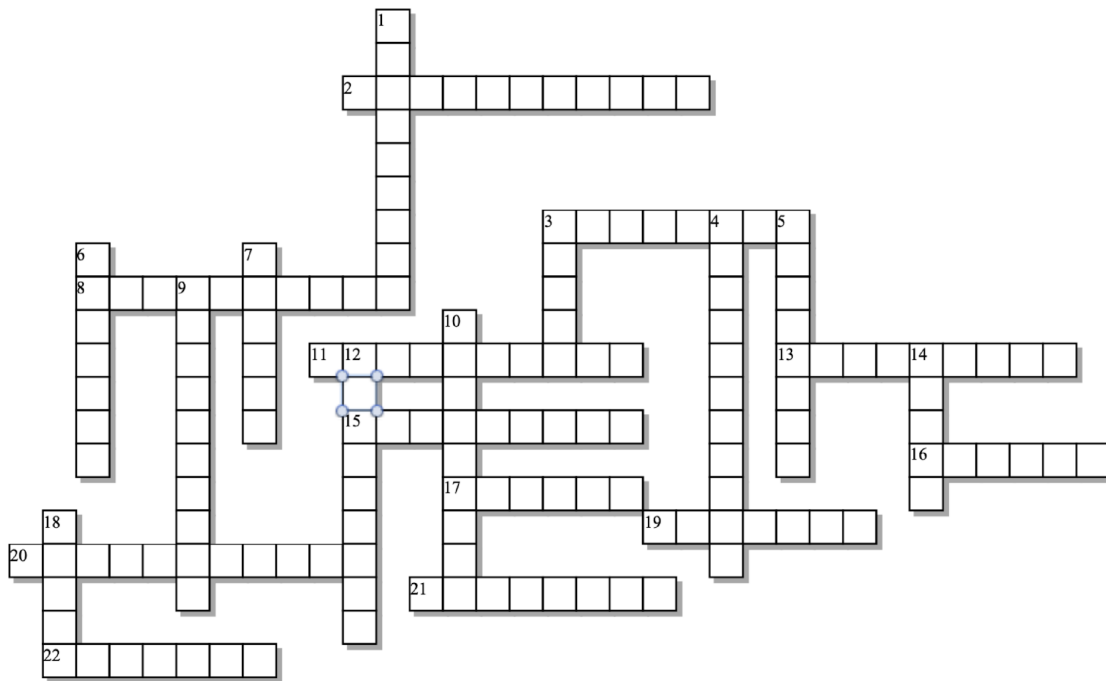
EXTENSION: Once you finish all the work above, please read The Shameful Past: The history of the discovery of the cigarette-lung cancer link. You can find the link under “extra credit...”

Use the space below and on the next column to take notes and to write a short summary (required for credit)

- ☐ 7. Take the quiz entitled “The Scientific Method and Designing Experiments.”

- ☐ 8. Complete the “Scientific Method Song, Interactive Lyrics”

9. Pause and think about what you now understand about how experiments work. This should include everything you know (both from this tutorial, and from prior knowledge). Write your brief summary of your understanding in the space below.

Biology: Core Concepts Crossword Puzzle

NOTE: If you're submitting this to your teacher as a google doc, please type your answers below the question bank.

Across:

- 2 - Dynamic maintenance of optimal internal conditions, despite environmental fluctuation.
 3 - An individual living thing.
 8 - A structure or behavior that aids in survival or reproduction
 11 - In biological systems, structure _____ function.
 13 - All of the living populations in the same area
 15 - Living things, from cells to entire organisms, are highly _____.
 16 - A group of connected cells with a common function
 17 - Life is sustained by a constant flow of _____, most of which originates with the Sun.
 19 - The study of life
 20 - You started life as a single cell. Now you're trillions of cells, exquisitely organized.
 21 - Reflexes, learning, and the bending of a vine around a branch are all examples of _____ to the environment.
 22 - Living things are complex _____ with inputs, outputs, boundaries, components, and processes.

Possible Answers:

adaptation, biology, cells, community, determines, development, ecosystem, energy, evolution, homeostasis, information, matter, molecule, natural, organ, organelle, organism, organized, population, response, systems, tissue, unity

Down:

- 1 - How living things have changed and diversified from earlier forms.
 3 - A group of tissues joined as a unit to perform a function
 4 - DNA is how genetic _____ flows from parents to offspring.
 5 - A group of atoms, chemically bonded together
 6 - This type of selection was first identified and described by Charles Darwin and Alfred Russell Wallace
 7 - Whereas energy flows through living systems and dissipates away as heat, the _____ that makes up living things is endlessly recycled.
 9 - A group of organisms of the same species, in the same area
 10 - A specialized part within a cell
 12 - A community of living things, plus the non-living components of the environment
 14 - Any group of living things that evolved from a common ancestor will have observable _____ of structure.
 18 - The basic units of life

SUBMITTING THIS ELECTRONICALLY? TYPE ANSWERS DOWN HERE!