

Why study biology?

Hmm, because life is happening all around you everyday.

- you must breathe, eat, and expel wastes
- you taste the food you eat
- you feel pain when injured, you bleed when cut
- your muscles get sore, your back aches
- you tire, sleep, and awaken
- you get sick, you get well
- you form complex relationships
- you interact with other living and non-living things
- you feel wind, see trees grow, and hear birds chirp
- you smell fresh cut grass
- you enjoy laughing with friends



You may say you are not interested in biology but life puts you center stage everyday!

We are going to try to explain the “why” and “how” some of these things occur in not only you, but in all living things!

Biology: The Science of Life



Science as a process.

Science is a state of knowing: having knowledge as opposed to ignorance or misunderstanding.

The systematic study of the structure and behavior of the physical and natural world through **observation** and **experiment**.

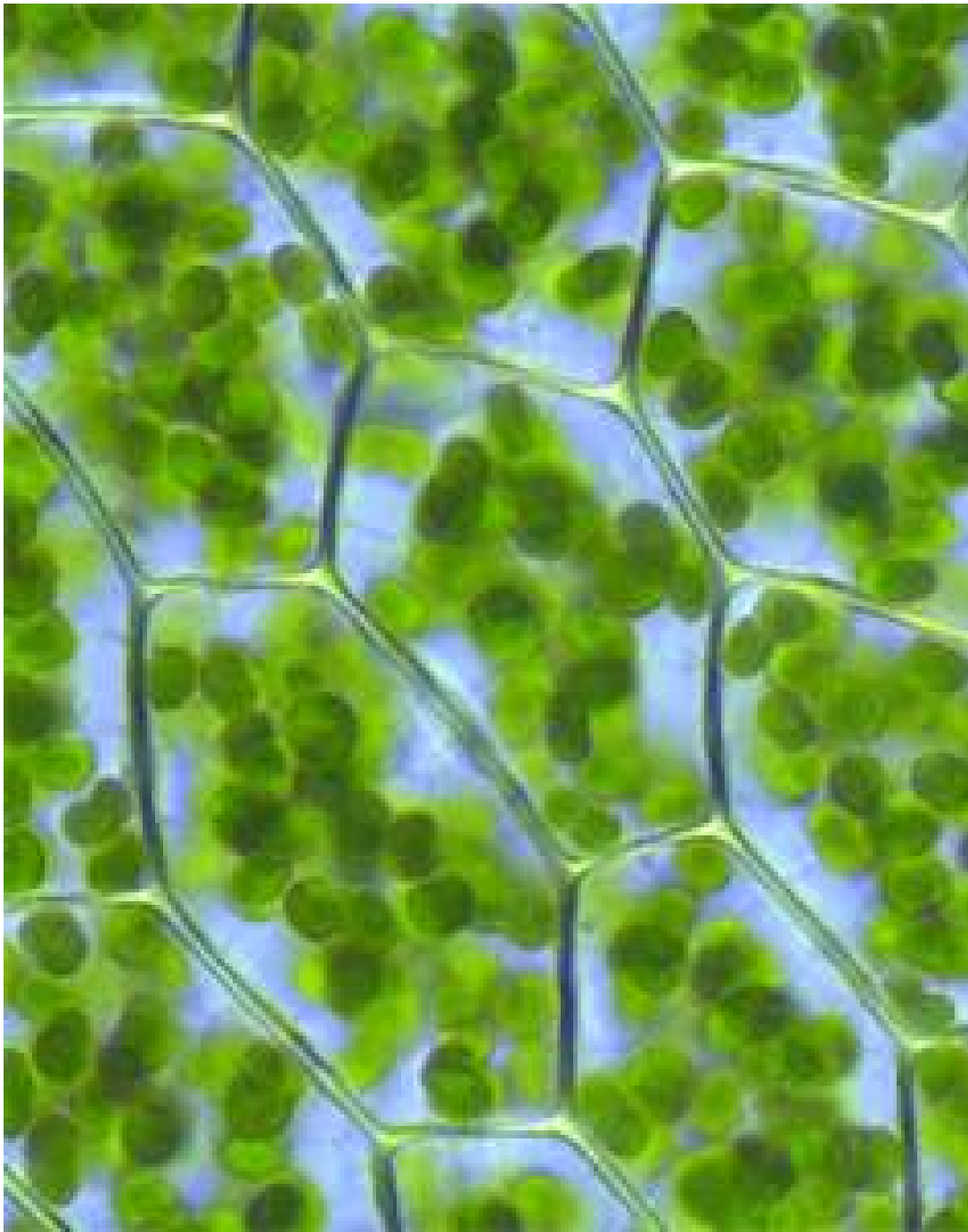


Unifying Principles of Biology

As we study the science of biology, certain principles form the foundation of knowledge already acquired by many individuals over centuries of observation and experimentation.



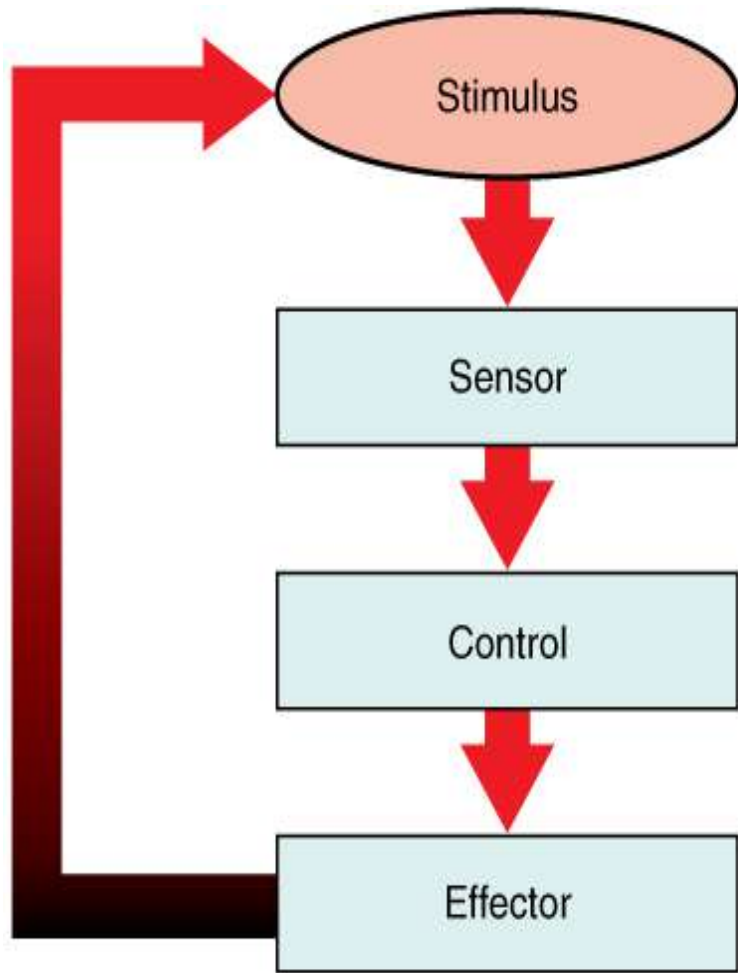
Unifying Principles of Biology



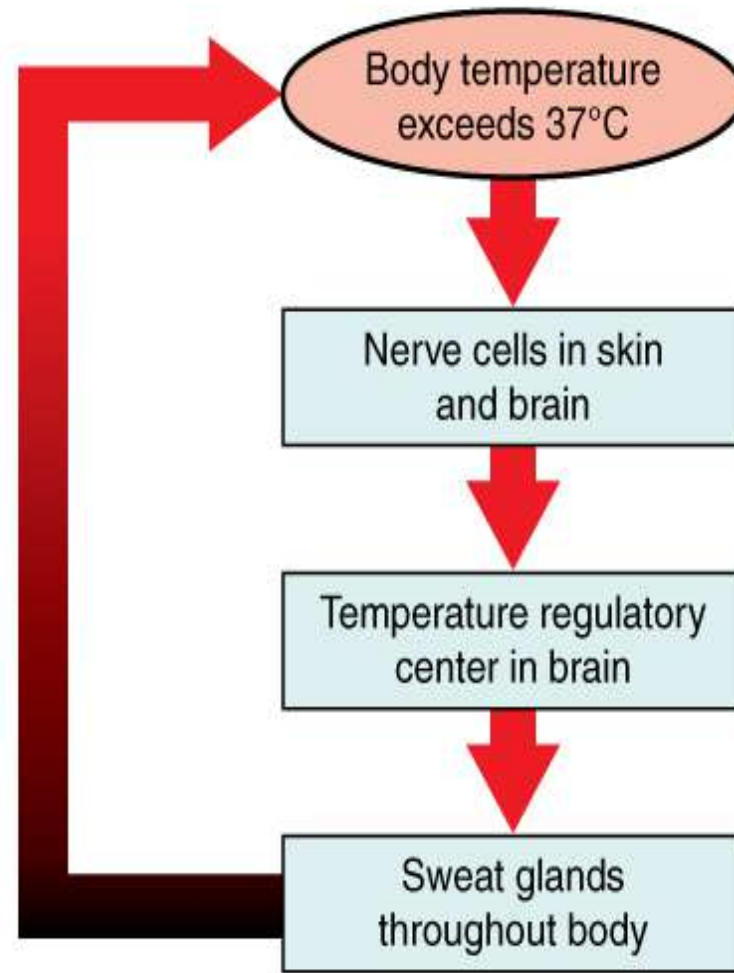
The Cell Theory



The Gene Theory

[illegible]

(a) Negative feedback loop

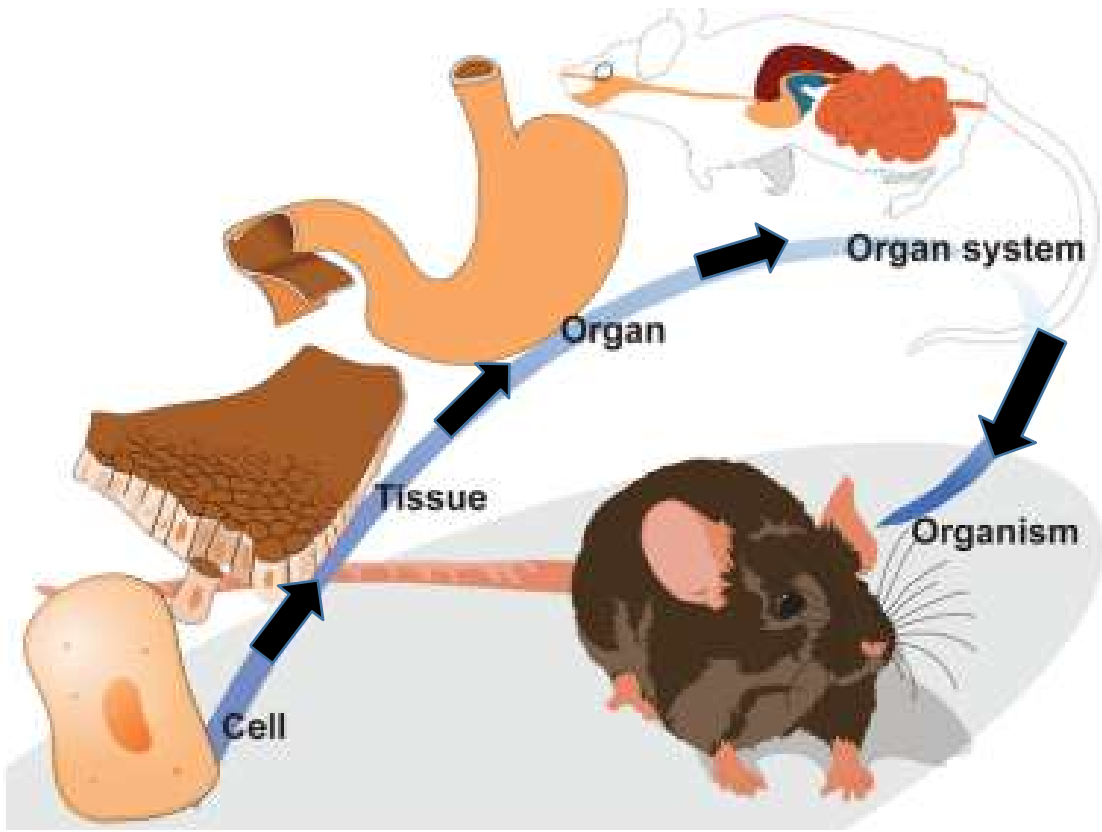


(b) Body temperature regulation

The diagram illustrates the structure of a bacterial flagellum. It shows a cross-section of the cell envelope, including the plasma membrane and the peptidoglycan layer. The flagellum is composed of several parts: the hook, the motor, and the flagellum itself. The hook is shown as a curved structure. The motor is shown as a complex of proteins embedded in the cell envelope. The flagellum is shown as a long, thin, whip-like structure extending from the cell. Labels include: Flagellum, hook, motor, Plasma membrane, and Peptidoglycan layer.

Flagellum = singular
Flagella = plural

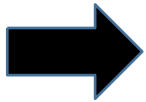
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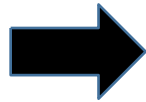
Levels of Organization

1. _____

Like cells
form



Several
tissues form

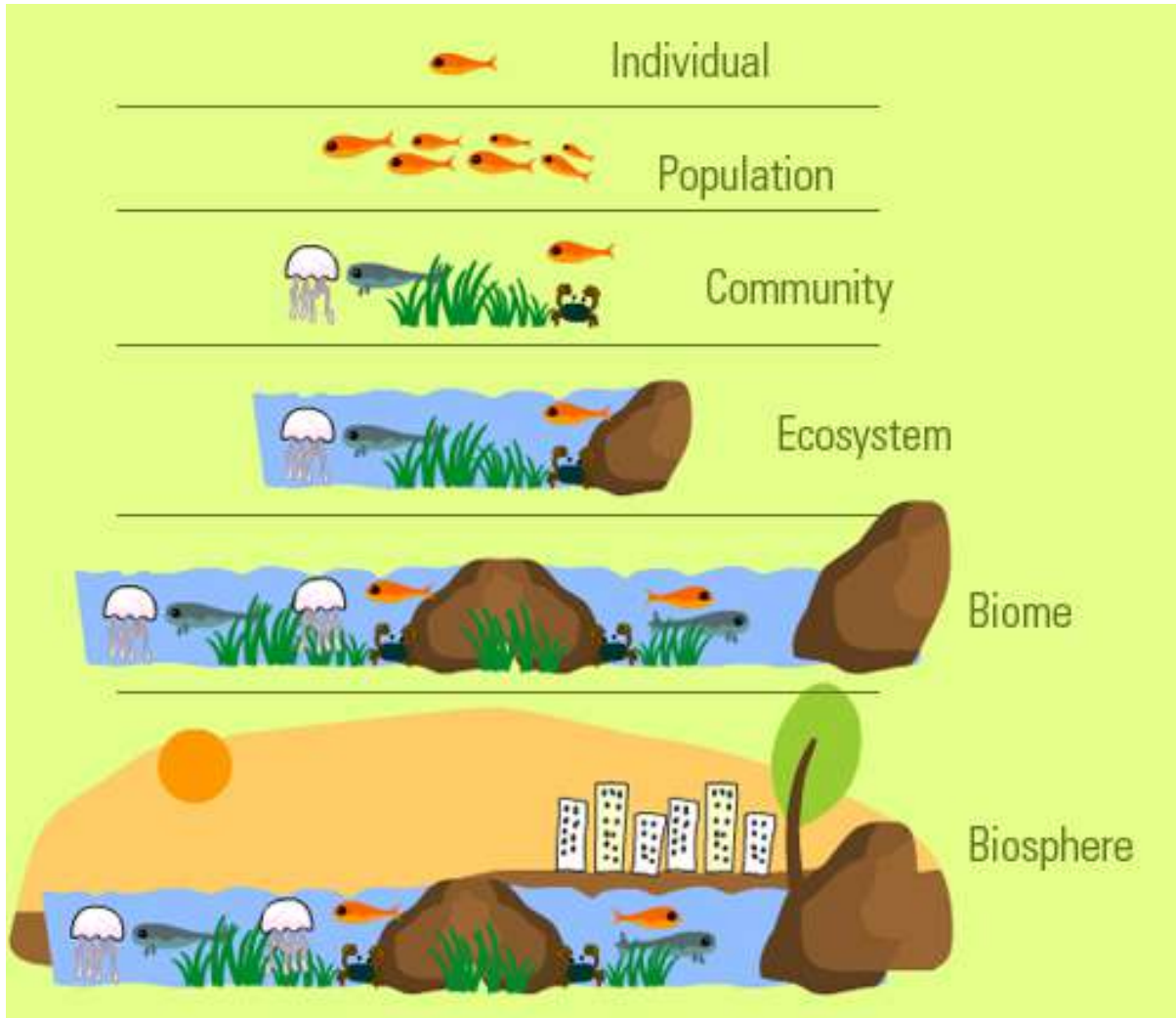


Several organs
form an



Several organ
systems form
an

Levels of Organization (con't)



2. _____

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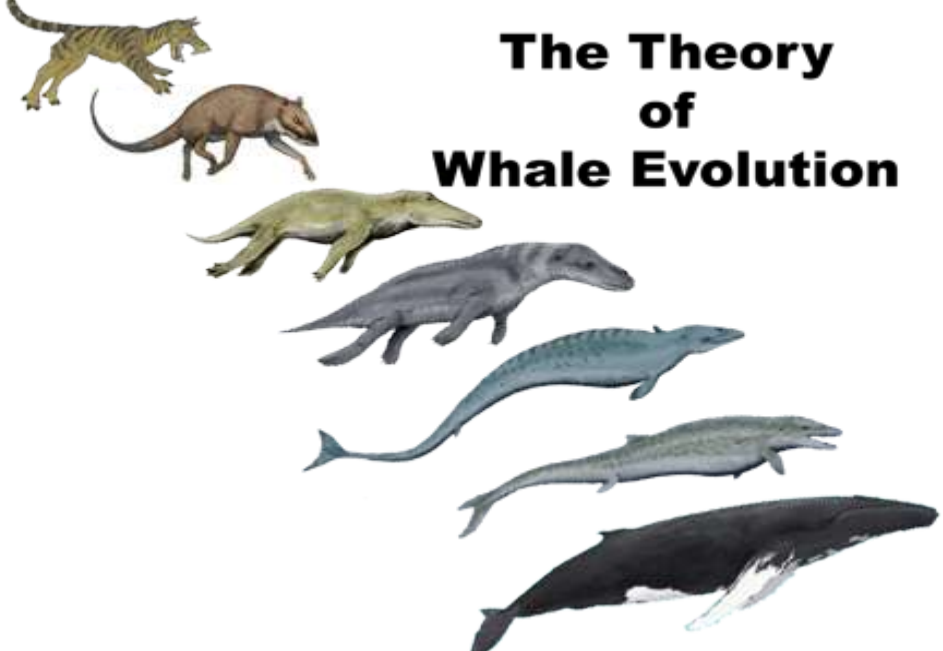


What benefit does the deer get?

Symbiosis = singular

Symbioses = plural

The Theory of Whale Evolution



EVOLUTION OF THE HORSE

The diagram illustrates the evolutionary progression of horses. It features five illustrations of horses of increasing size and complexity, arranged from left to right. Below each illustration is its name. The background is a light blue gradient.

- Eohippus**: A small, three-toed animal, resembling a dog or a small deer.
- Mesohippus**: A slightly larger, four-toed animal with a more horse-like body.
- Merychippus**: A medium-sized, four-toed animal with a more pronounced horse-like build.
- Pliohippus**: A large, four-toed animal with a more pronounced horse-like build.
- Modern Horse**: A large, single-toed animal with a fully developed horse-like build.

POOKYNS-5

Evolution

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



In Summary:

Science is the way to acquire knowledge in an organized way.

Biology goes on around us everyday and by studying it we get a better understanding of how it works.

Biology has some underlying principles that unify our ideas of Life.

All of these underlying principles are working together in nature and each depends upon the other.