Cell Organization

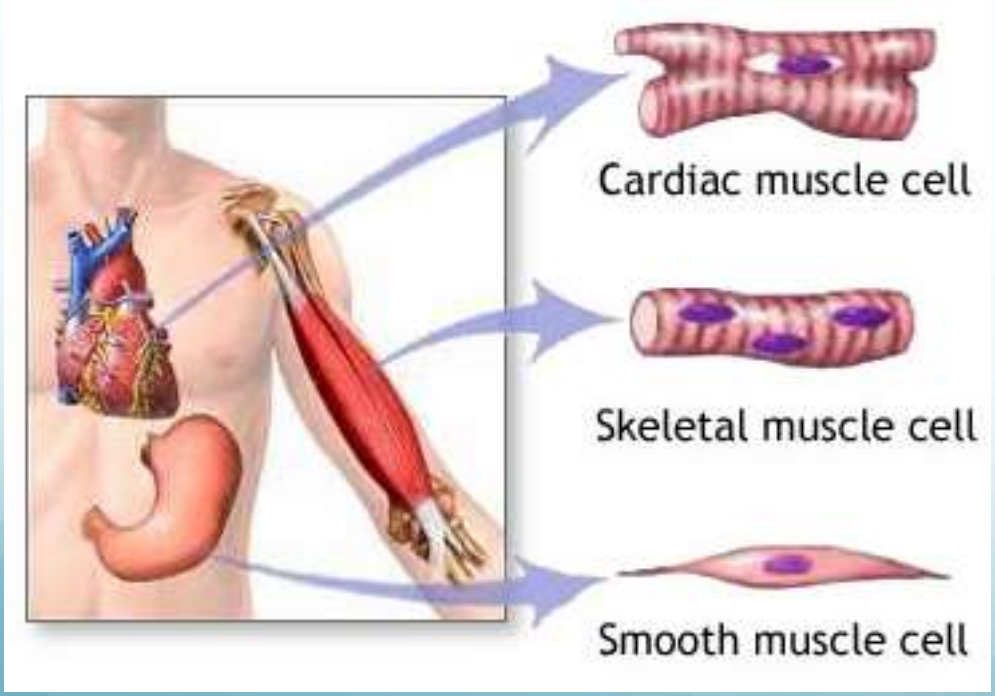
Understand that living systems, at every level of organization, demonstrate the complementary nature of structure and function.

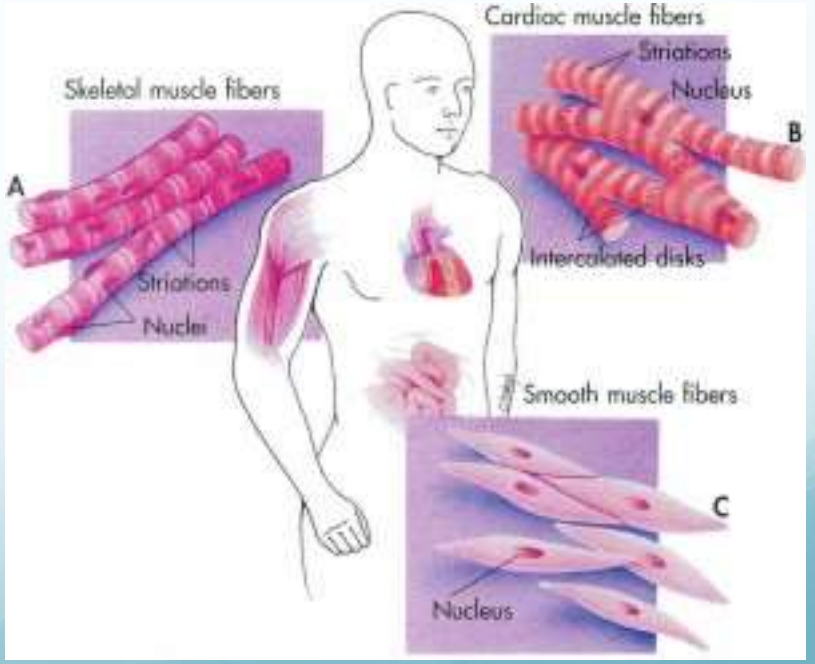
Key Concepts

- Individuals are composed of specialized cells, tissues, organs, and organ systems that perform specialized functions.
- An organism’s body plan and its ability to regulate its internal environment enable it to make or find food, grow, and reproduce in a constantly changing environment.

Specialized Cells

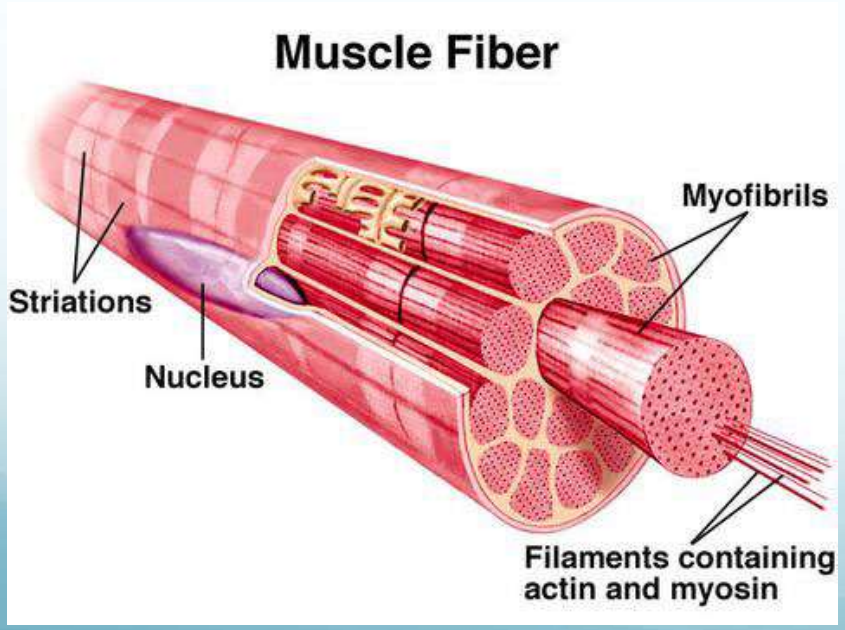
- Cells have a particular structure and function.
- Ex. – Muscle cells are a type of specialized cell; and it will contract when stimulated.

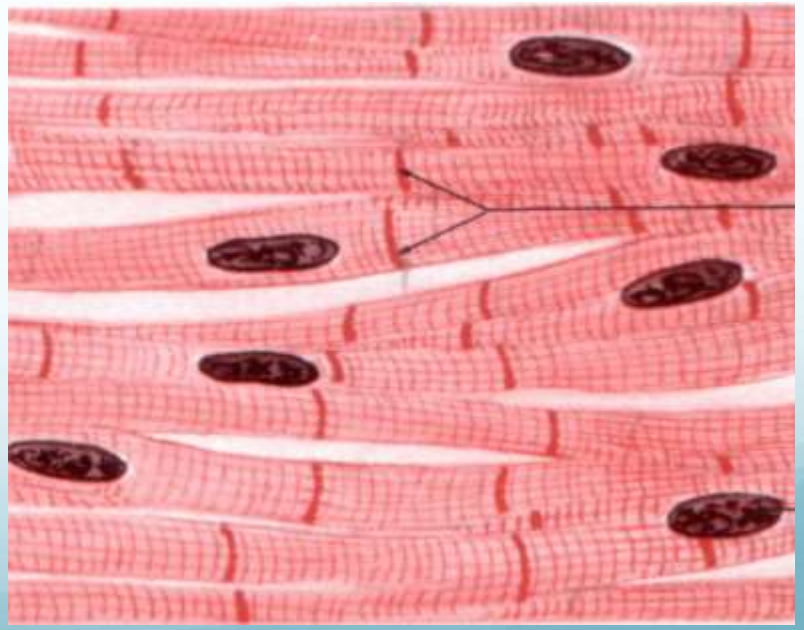




Tissues

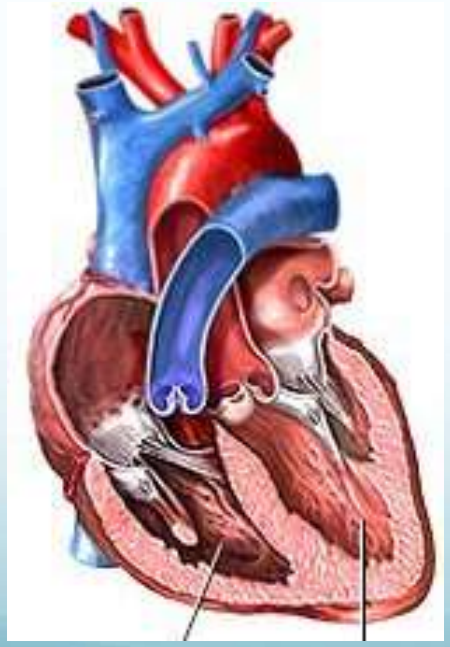
- Groups of similar cells form tissues that perform a specific function.
- Ex. – Muscle tissue is composed of muscle cells; and will all contract together when it is stimulated.

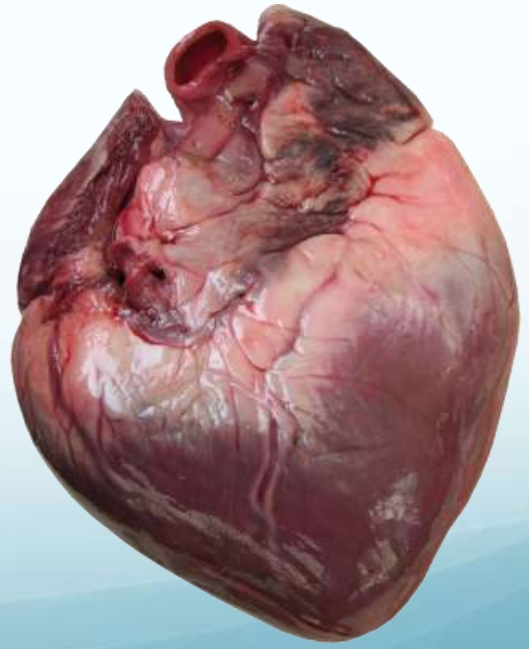




Organs

- Groups of different types of tissues form organs, and work together to perform a specific function.
- Ex. – The heart is composed of muscle, nerve, and connective tissues; and it pumps blood throughout the body.





Organ Systems

- Groups of different organs work together in organ systems to perform a specific function.
- Ex. – The cardiovascular system is composed of the heart, arteries, and veins; and it works to bring nutrients and wastes (in blood) to and from every cell.

Organism

- Groups of different systems work together in an organism to perform all life processes.
- Ex. – You are an organism.

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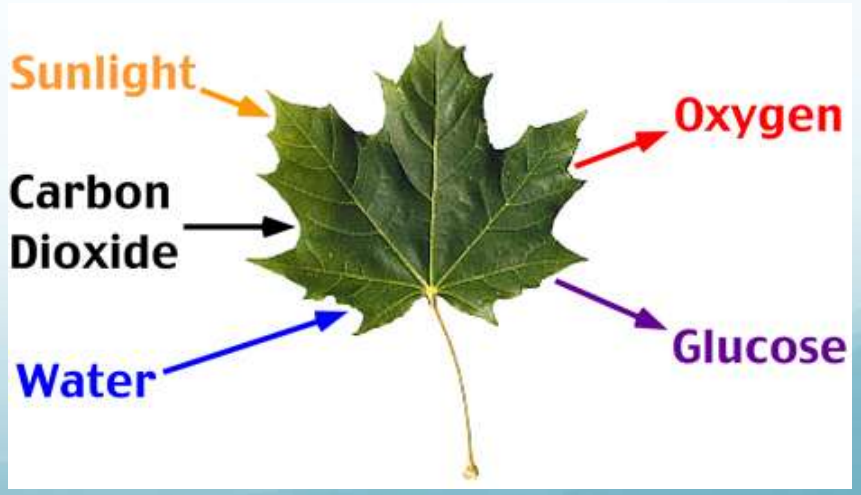
Finding Food

Body Plan

- An organisms body plan allows it to make or find food.

Internal Environment

- An organisms ability to regulate its internal environment enables it to make or find food.



Camouflage

- An organisms body plan allows blend with its environment making it harder to detect.
- This is used by both predators and prey.

Weapons

- An organisms body plan allows it to kill its prey or to defend itself against predators.
- This is used by both predators and prey.

Poisons

- Some animals have developed poisons as a defense mechanism or as a means of subduing their prey.
- This is used by both predators and prey.

Size

- Some animals are either very small, or very large in order to hunt prey or evade predators.
- This is used by both predators and prey.

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Skill Check

1. An example of a specialized cell in the human body would be…
   a) The heart.
   b) Connective tissue.
   c) Muscle cell.

Skill Check

2. Which of the following is a definition of an organ?

   a) Groups of different tissues that work together to perform a specific function.

   b) Groups of similar cells that work together to perform a specific function.

   c) Groups of different organs that work together to perform a specific function.

Skill Check

3. Which one of the follow shows the progressive organization of cells?

   a) Cells ➔ Organs ➔ Systems ➔ Tissues

   b) Cells ➔ Tissues ➔ Organs ➔ Systems

   c) Cells ➔ Systems ➔ Tissues ➔ Organs

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