



How Animals Stay Alive

Lesson 10



How animals stay alive

- This lion uses caution to hunt down a porcupine
- The porcupine could jab its quills into the lion, causing it great pain
- Both kinds of animals are using their body systems to stay alive
- If the lion kills the porcupine, it will get the energy it needs for fuel
- If the porcupine gets away, it will continue to live
- All animals must carry out the same basic activities to stay alive



Basic life activities review

- **All living things...**

Basic life activities

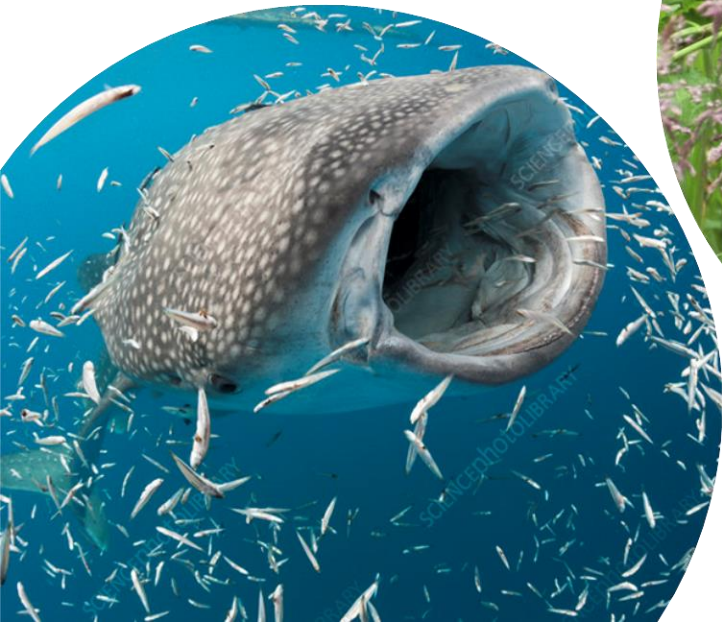
1. Grow and develop
2. Move
3. Need energy (food)
4. Remove waste
5. Respond to stimuli (sense and react to their internal/external environment)
6. Reproduce

- Living organisms need energy in order to perform all life activities!



How do animals get and digest food?

- Unlike plants, animals cannot make their own food
- Animals must get food from other organisms
- Different animals have different ways of getting food
 - Filter feeding
 - Feeding on fluids
 - Consuming large pieces of food

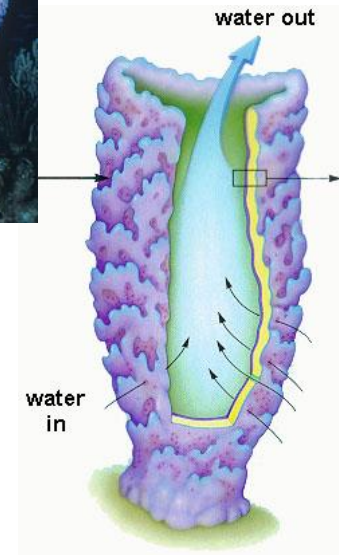
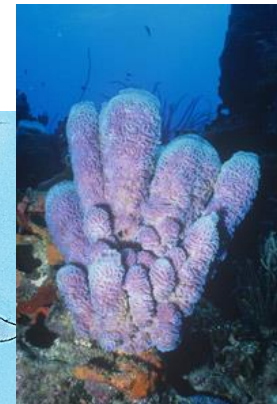
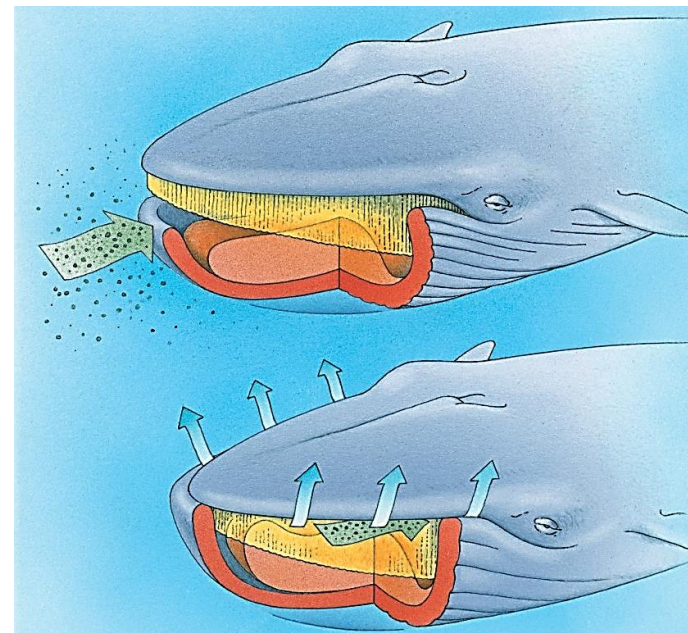
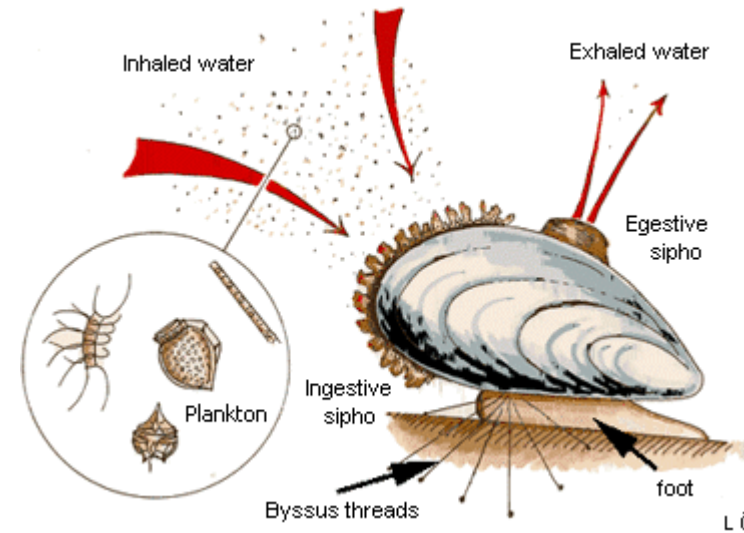


Filter Feeding

- Many animals that live in water get food by filtering, or straining the water
 - This method is called **filter feeding**

Examples:

- **Mature sponges** cannot move so they strain bacteria and other tiny organisms from the water that passes through their body
 - This allows sponges to gather food without having to chase it
- **Clams and oysters** tend to remain in one spot and use their gills to strain food out of the water
- **Baleen whales** move and filter feed by swimming with their mouths open to harvest millions of tiny animals



Feeding on Fluids

- Some animals get food from the fluids of plants or other animals
 - The fluids are rich in nutrients

Examples:

- **Aphids** and **cicadas** are insects that have piercing mouthparts
 - They draw sap from roots and stems
- **Bees, butterflies,** and **hummingbirds** draw nectar from flowers
- **Spiders** and **assassin bugs** capture insects and suck the fluid from their bodies
- Leeches, mosquitoes, and horseflies feed on the blood of vertebrates, including humans



Consuming large pieces of food

- Most animals consume, or eat, large pieces of solid food
 - Sometimes they eat entire organisms
- These animals use different kinds of body structures to capture and consume their food

Examples:

- Cnidarians such as, hydras and jellyfish have tentacles armed with stinging cells used to catch small animals in the water and bring them to their mouths
 - Consume their food whole



Consuming large pieces of food cont'd

- Many insects have mouthparts that are suited for cutting and chewing
- The mouthparts turn the food into pieces that are small enough to swallow

Examples:

- Grasshoppers, termites, and beetles use their chewing mouthparts to feed on plants
 - Animals that eat plants are known as herbivores



Consuming large pieces of food cont'd

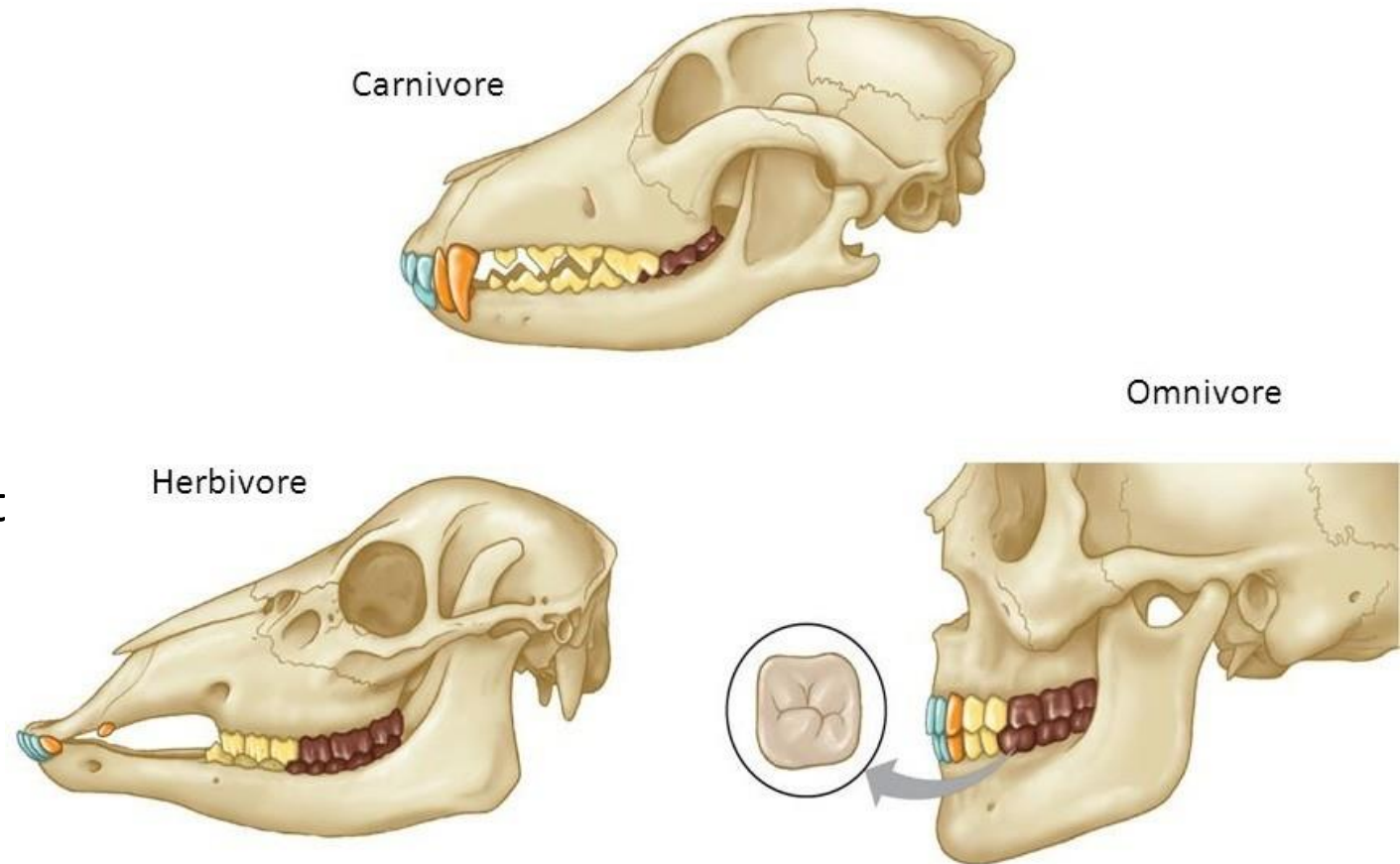
Examples:

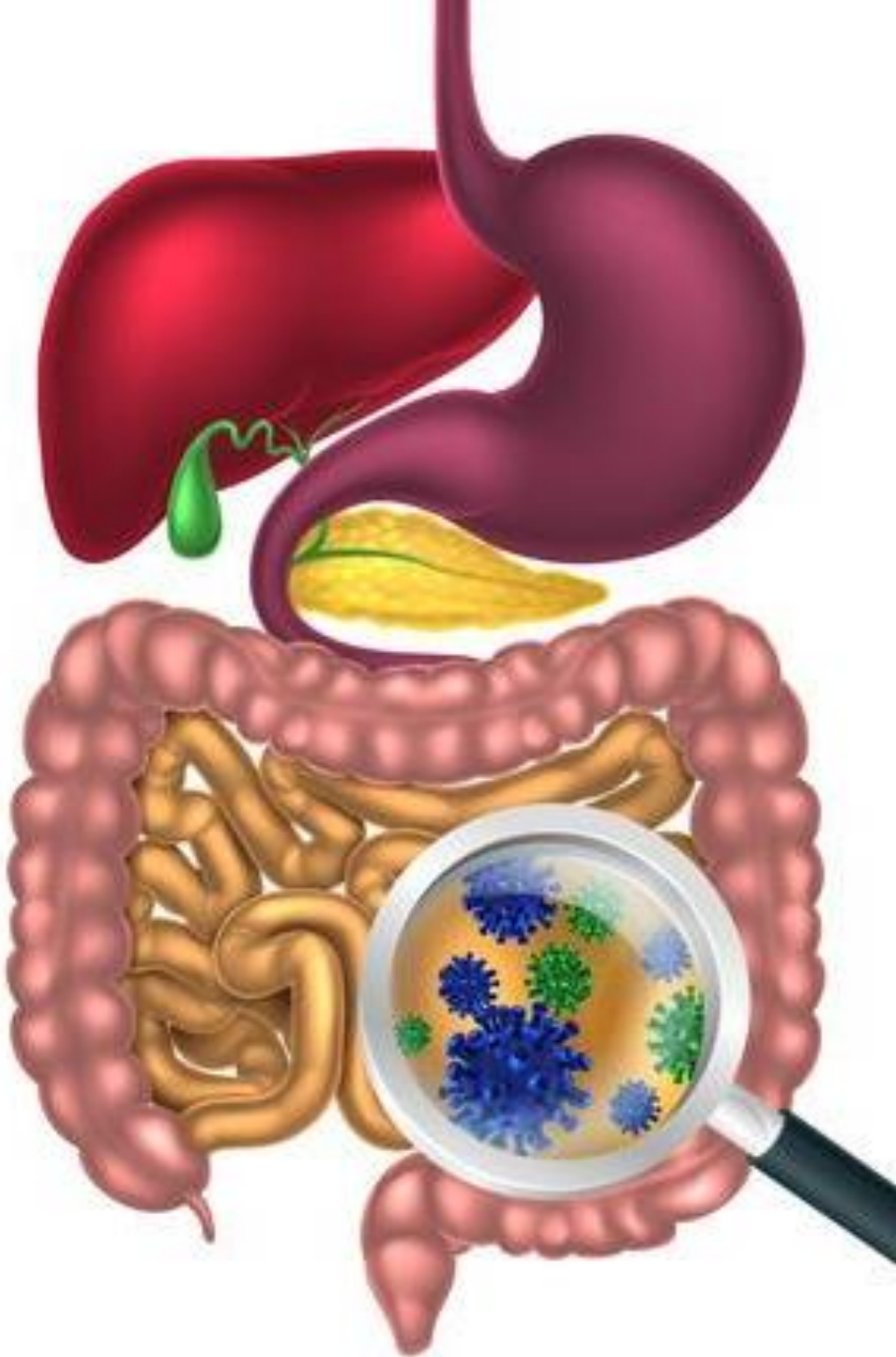
- Dragonflies and praying mantises also have chewing mouthparts but eat other insects
 - Animals that eat other animals are called carnivores



Consuming large pieces of food cont'd

- Vertebrates are the only animals that have teeth
- Mammals have teeth of different shapes and sizes
 - Each kind of tooth does a certain job (cutting, gripping, piercing, grinding, crushing food)
- A mammal's teeth tell what kind of food it eats
 - Carnivores have sharp, pointed teeth to tear flesh
 - Herbivores have large teeth with flat surfaces for grinding plants
 - Omnivores have a combination for tearing and grinding



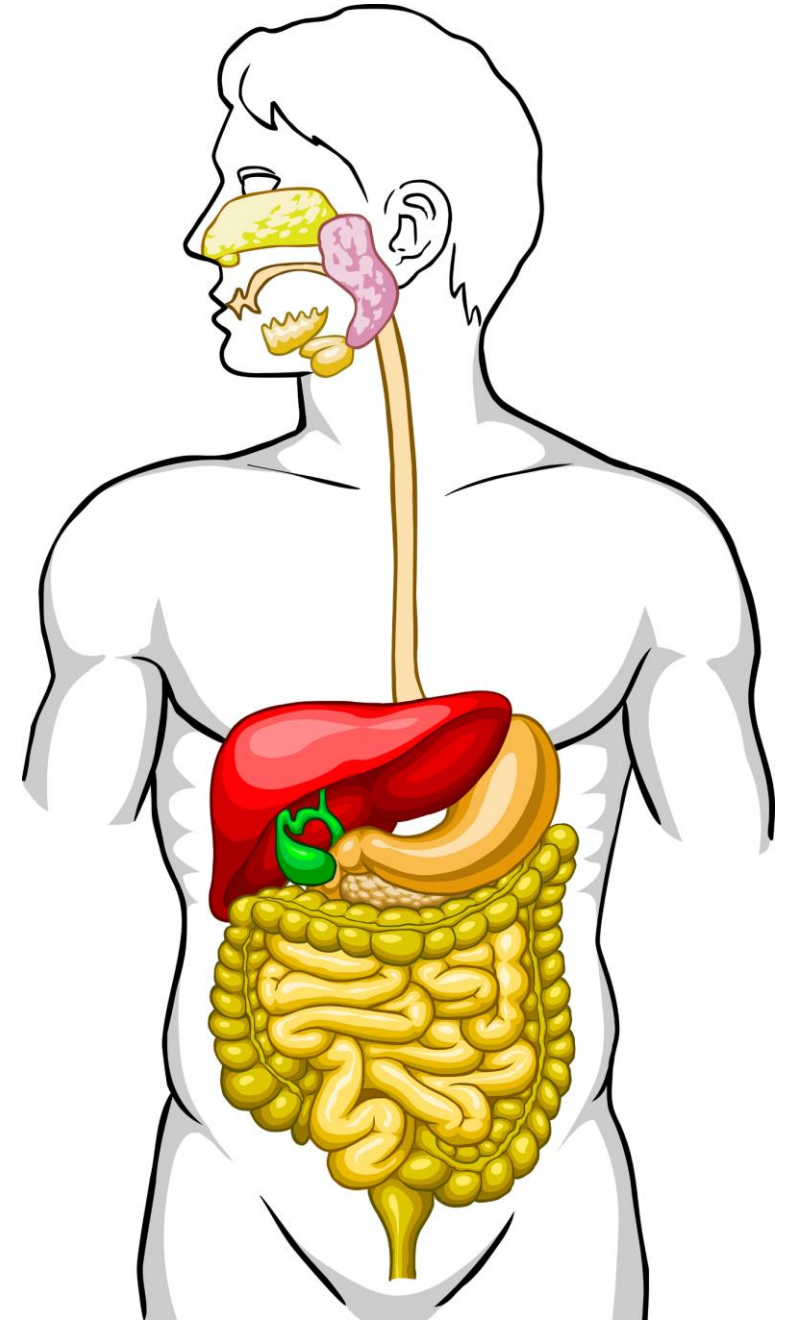


Digesting Food

- Foods usually contain fats, proteins, and carbohydrates
- These chemicals provide the energy an animal needs
- However, they are too large for most animal cells to absorb, or take in
- These large food particles must be broken down into smaller chemicals before cells can absorb them

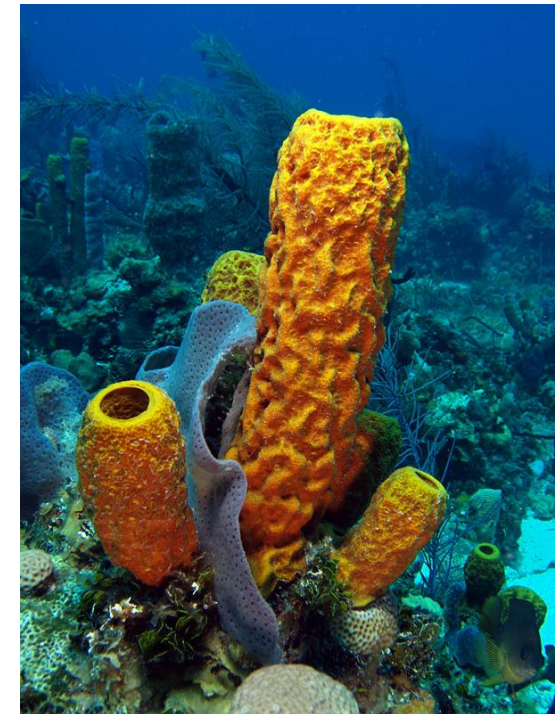
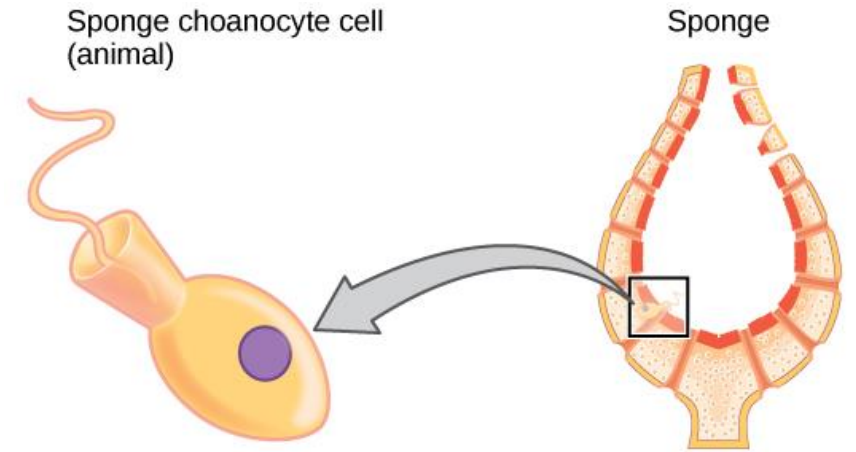
Digesting Food cont'd

- The process of breaking down food into small chemicals is **digestion**
- Animals secrete digestive enzymes to digest food
 - An **enzyme** is a substance that speeds up chemical changes
 - **Secrete** means to form and release



Digesting Food cont'd

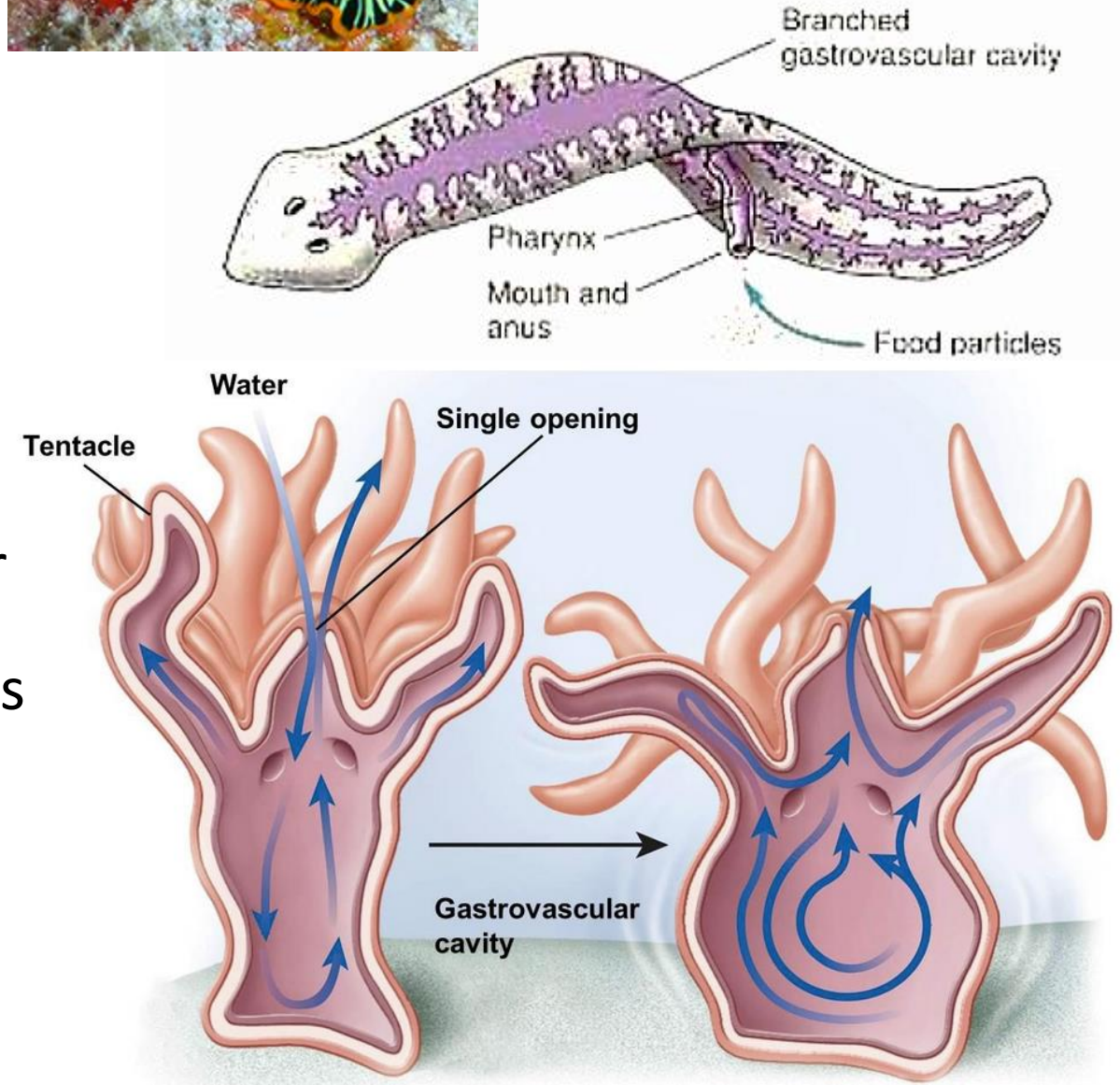
- In sponges, the **digestive enzymes** work inside cells
 - Line the inside of the sponge
 - Trap food that enters the sponge
 - Package the food in food vacuoles
 - Break down the food into small chemicals
 - Absorb the chemicals
- Digestion inside cells have one drawback
 - The food must be small enough to fit inside food vacuoles
- Most other animals digest food outside of cells which allows them to eat larger foods



Gastrovascular Cavities

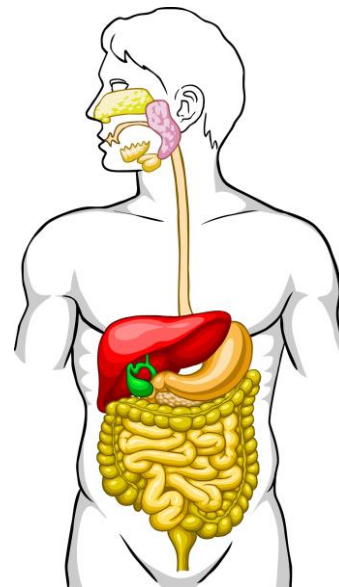


- Cnidarians (hydras, jellyfish) and flatworms digest food in a hollow space called a **gastrovascular cavity**
 - This space has only one opening, the mouth
 - Food enters through the mouth
 - Special cells that line the gastrovascular cavity secrete digestive enzymes which break down the food into small particles
 - The cells can then absorb the particles
 - Material that is not digested leaves through the mouth



Digestive Tracts

- Animals that are more developed have a **digestive tract**
 - A tube-like digestive space with an opening at each end
 - Food moves through a digestive tract in one direction
 - Different parts of the tract carry out different functions
 - The main functions of the digestive tracts are:
 - storing food
 - digesting food
 - absorbing nutrients



Shark



Salamander



Lizard



Pigeon

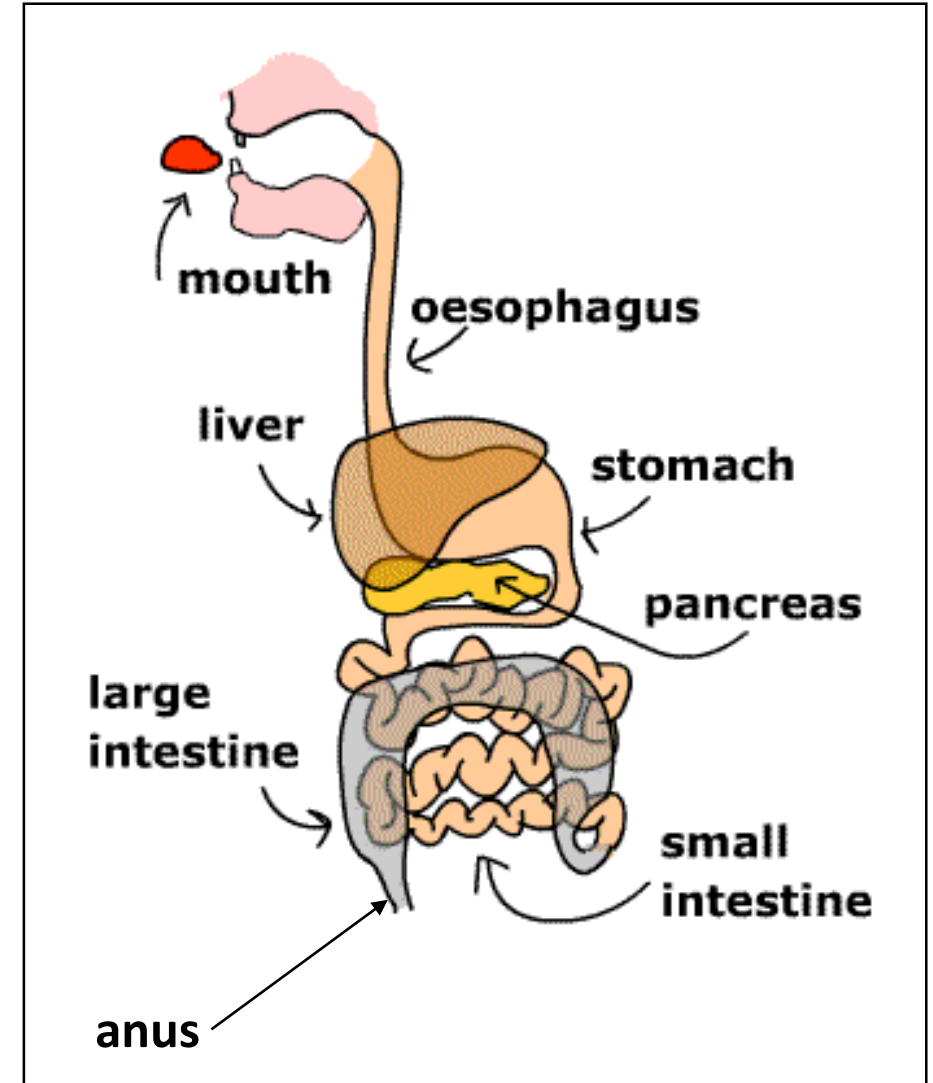


Cow



Digestive Tracts cont'd

- Most digestive tracts are organized the same way
 - Food enters the digestive tract through the **mouth**
 - The food passes down the **esophagus** to the **stomach**
 - Food mixes with acid and digestive enzymes in the stomach and is broken down further into smaller pieces
 - More digestive enzymes are added in the **intestine** where the food is broken down even more so that cells can absorb the nutrients
 - Material that is not digested leaves the digestive tract through an opening called the **anus**



Summary

- All living organisms need to carry out the same basic life activities
 - The basic life activities can only be done if the living organisms have energy
- Different animals have different ways of getting food
 - Filter feeding (e.g. sponges, clams, oysters, baleen whales)
 - Feeding on fluids (e.g. aphids, cicadas, spiders, assassin bugs)
 - Consuming large pieces of food (hydras, jellyfish, herbivores, carnivores, omnivores)
- Large food particles need to be broken down small enough so that cells can absorb them and use the energy
 - Digestive enzymes
 - Gastrovascular cavity
 - Digestive tract