

Fish

Read 768-781

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Amphibians

Pg.789 #1-5

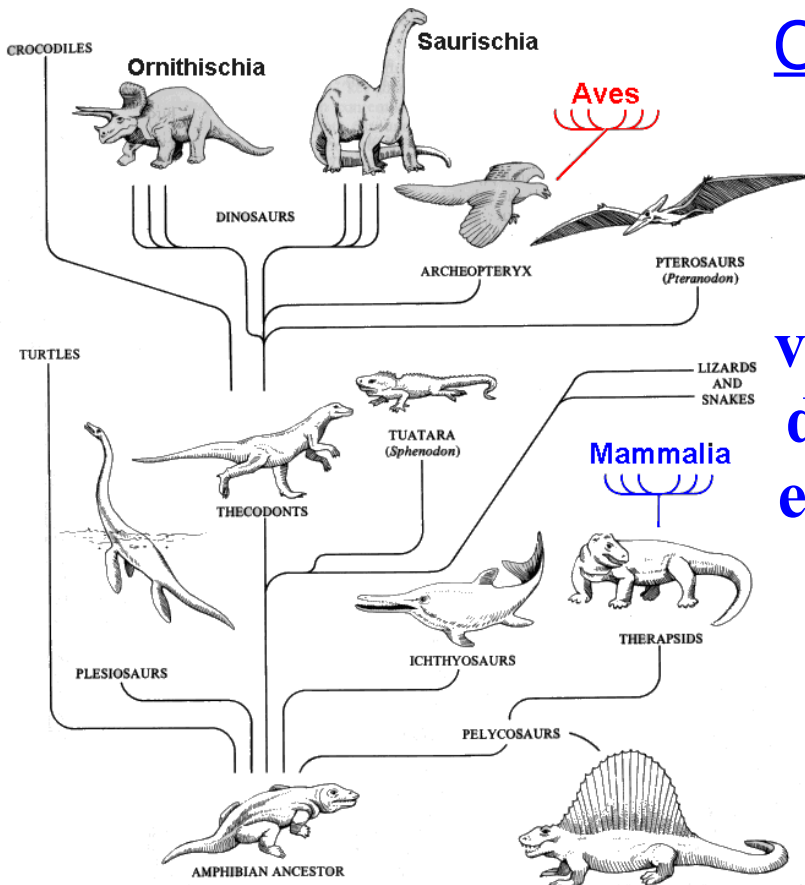
Reptiles & Birds

Read page 796-805

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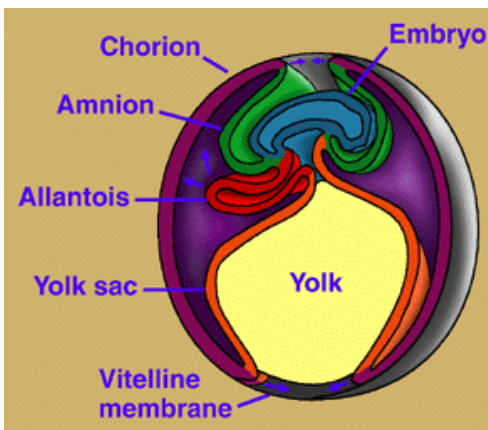
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Class Reptilia

The reptiles are the first terrestrial vertebrates. They do not have to lay eggs in the water.



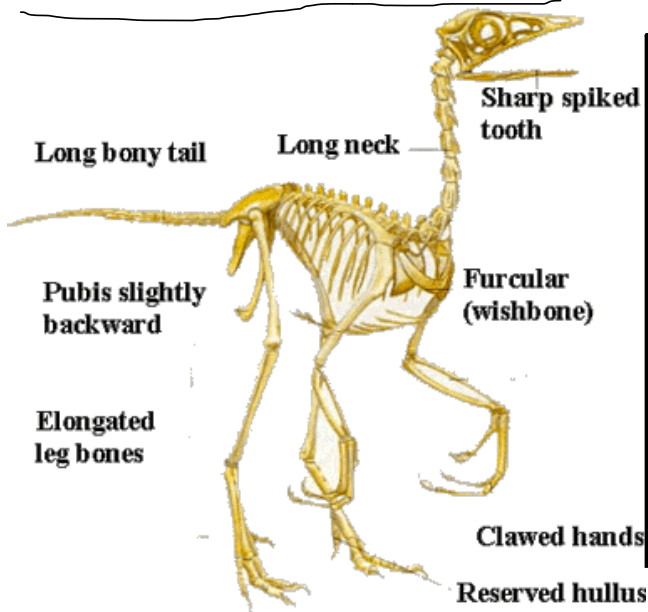
The egg that they lay provides a self-contained habitat and can survive in a dry environment (amniotic). This is a major development. Inside the shell are four membranes, which provide nourishment and protect the developing embryo. They are the amnion, the yolk sac, allantois and the chorion.



Examples



Class Aves (Birds)

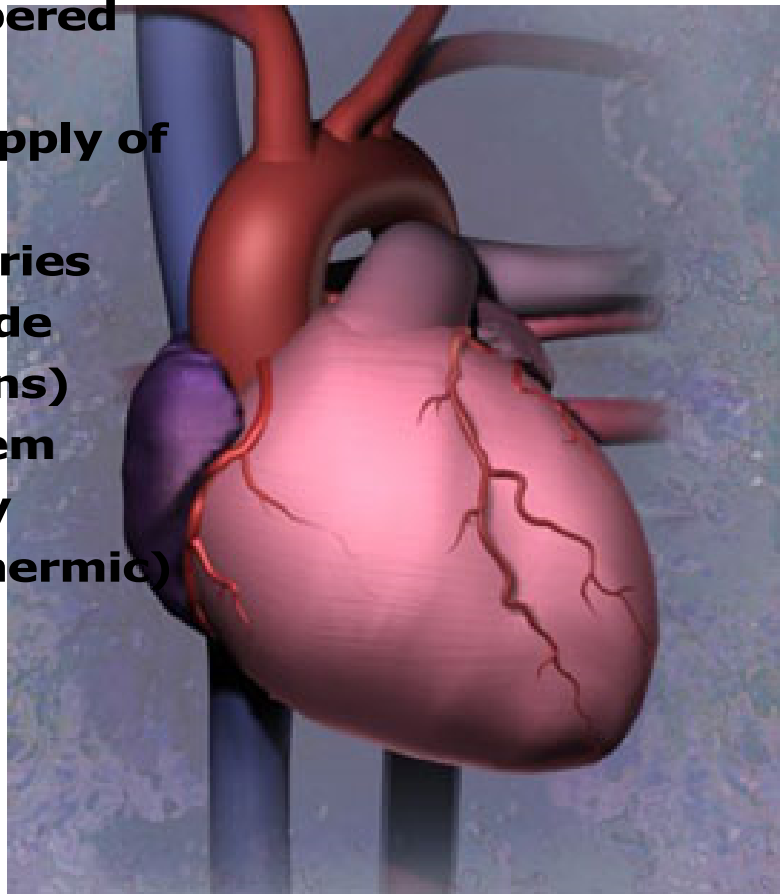
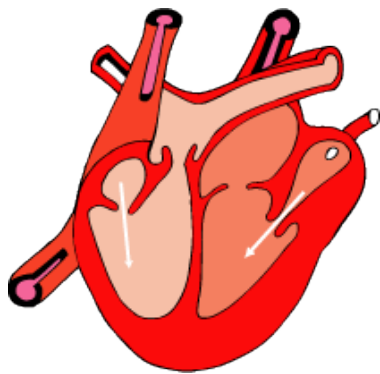


Birds are thought to have evolved from a bipedal (what does this mean?) crocodile-like reptile. Arhaeopteryx is thought to be the link between birds and reptiles. It has features of both.



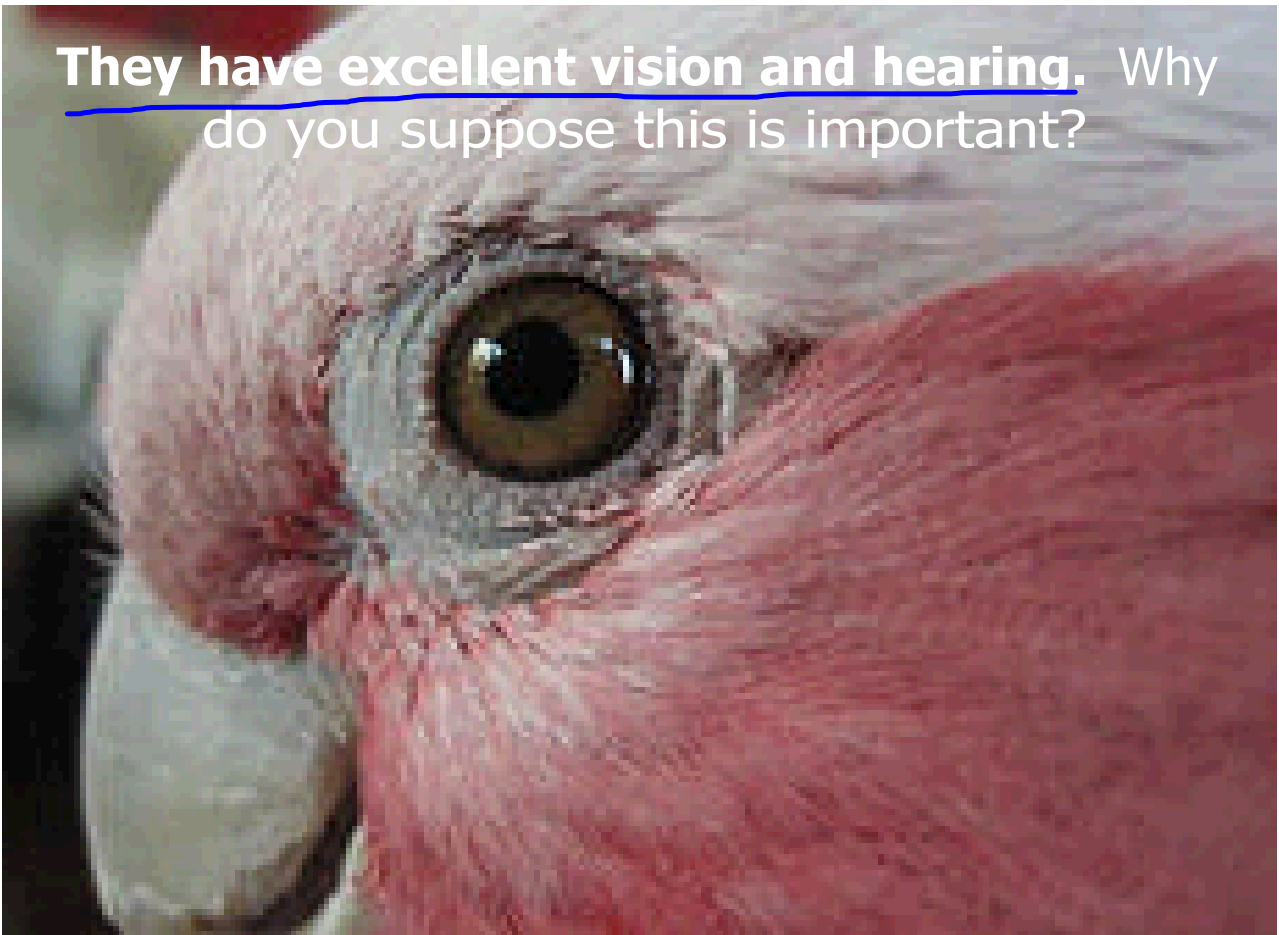
Feathers provide insulation and protect the skin. They also have hollow but strong bones for flight. Their sternum is large and provides attachment of flight muscles. They contain lungs and airsacs, which provide continuous oxygen.

They have a 4 chambered heart (like us) which ensures sufficient supply of O₂. It separates the oxygen carrying arteries and the carbon dioxide carrying venous (veins) blood. This helps them keep a constant body temperature.(Endothermic)





They have excellent vision and hearing. Why do you suppose this is important?



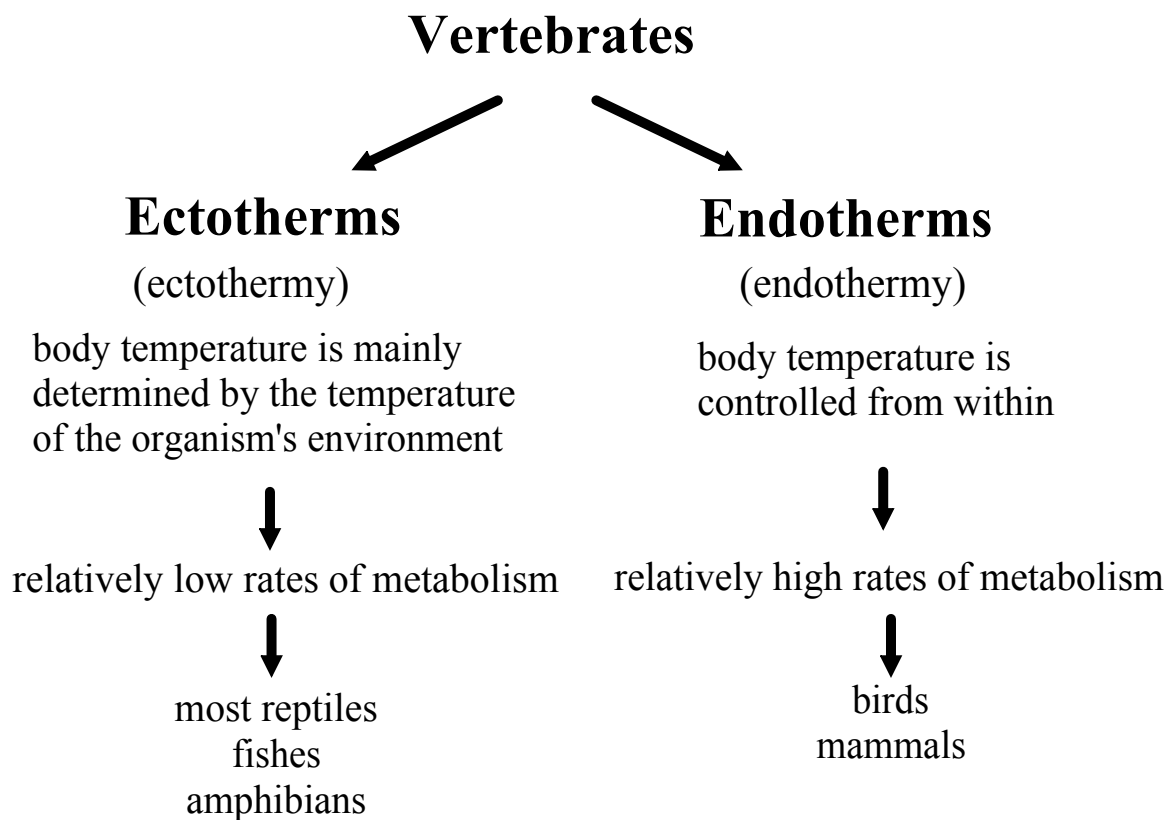
Controlling Body Temperature

(Page 854)

The controlling of body temperature is important for maintaining homeostasis in vertebrates, particularly in habitats where temperature varies widely with time of day and season.

All of the ways vertebrates control their body temperatures incorporate three important features:

1. a source of heat for the body
2. a way to conserve that heat
3. a method of eliminating excess heat when necessary



Form and Function in Chordates

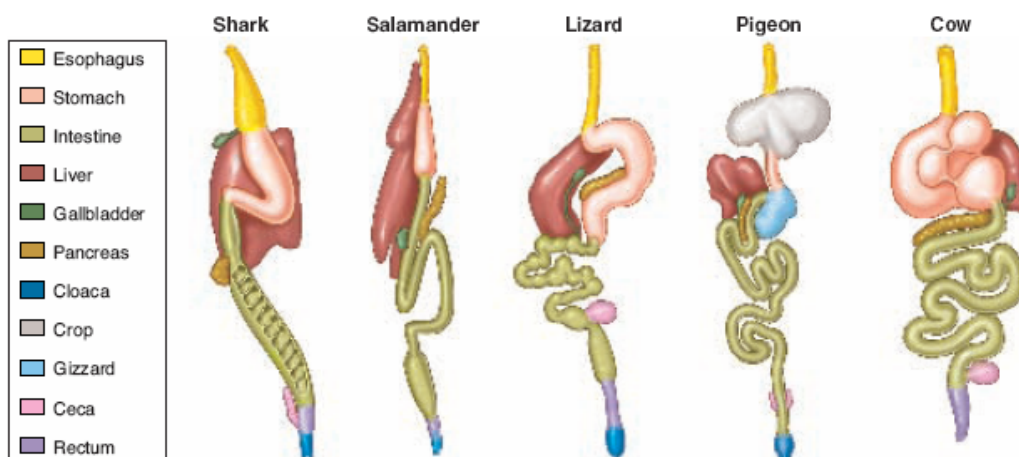
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Vertebrates have organ systems that exhibit a wider range of complexity than those of nonvertebrates.

Feeding

Feeding and digestion help maintain homeostasis by providing the body with a continuing supply of needed nutrients.

The digestive systems of vertebrates have organs that are well adapted for different feeding habits.



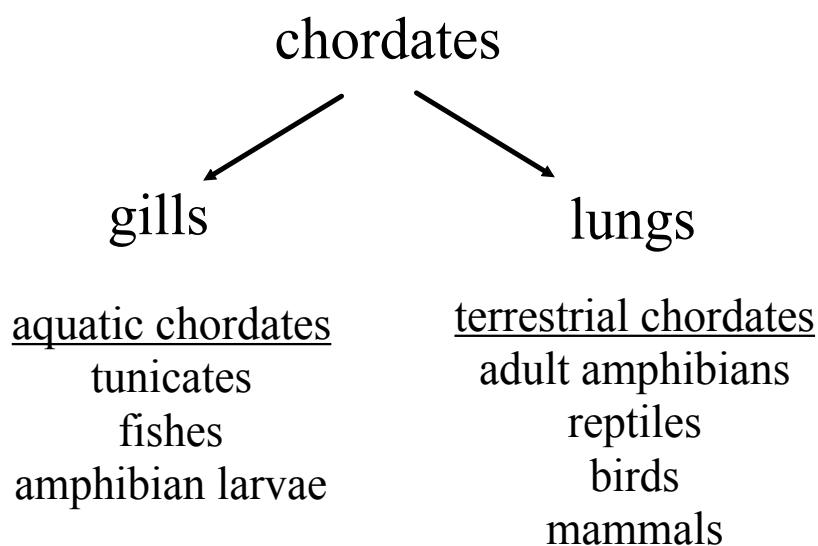
▲ **Figure 33-8** The digestive systems of vertebrates are adapted for a variety of feeding modes. As you can see, these systems differ in their degree of complexity.

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cloaca - a muscular cavity at the end of the large intestine through which digestive wastes, urine and eggs or sperm leave the body

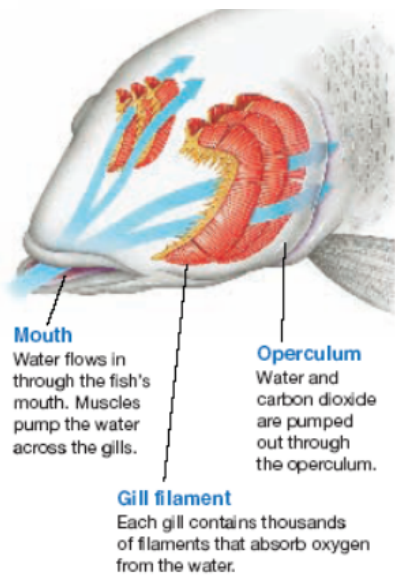
ceca (singular: cecum) - fingerlike pouches where food may be further digested

Respiration



Gills Page 859

▼ **Figure 33-9** Fishes and many other aquatic chordates use gills for respiration. **Interpreting Graphics** Describe the path of water as it flows into and out of the fish.



mouth → gills → operculum

operculum - a protective bony cover

Lungs

Inhaling brings oxygen-rich air from outside the body through the trachea and into the lungs. The oxygen diffuses into the blood inside the lung capillaries. At the same time carbon dioxide diffuses out of the capillaries. Oxygen-poor air is then exhaled.

amphibians -----> mammals

surface area of lungs increases

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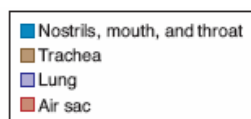
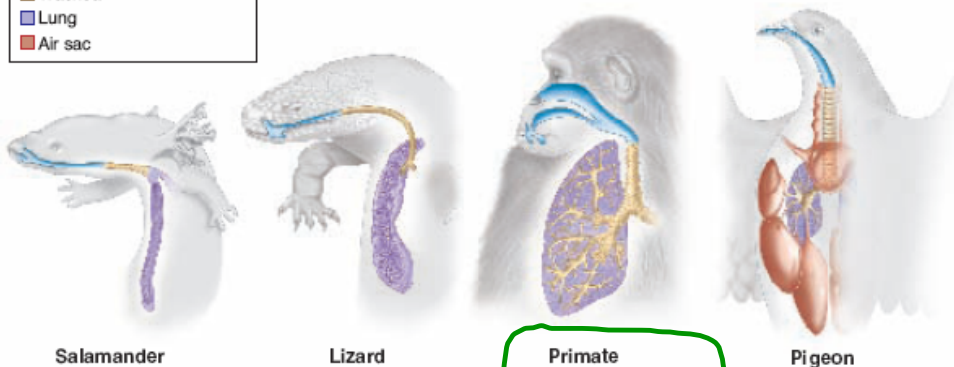


Figure 33-10 Unlike most aquatic chordates, land vertebrates use lungs to breathe. A few aquatic chordates, such as sea turtles and marine mammals, use lungs as well.



a sac with ridges

a series of large and small chambers

lungs branch extensively

air flows in only one direction

- air moves in and out through the same passageways

- system of tubes and air sacs

- alveoli

alveoli (singular: alveolus) - bubble-like structures .
 - provide an enormous surface area for gas exchange .