Glencoe Science

Biology

Interactive Classroom

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Mc Graw Hill Glencoe

Chapter 29 Reptiles and Birds

Section 1: Reptiles

Section 2: Birds

EXIT

Click on a lesson name to select.

29.1 Reptiles

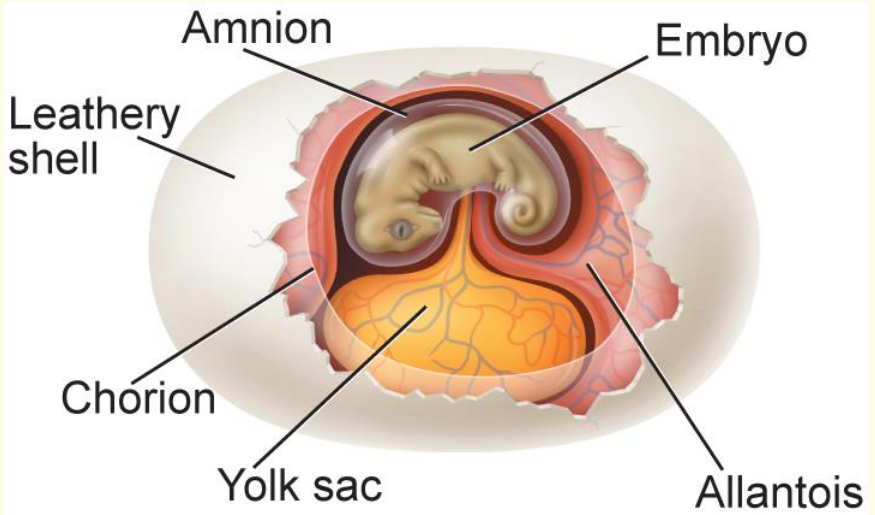
Characteristics of Reptiles

- Reptiles are fully adapted to life on land.
- Characteristics that allow reptiles to succeed on land include a shelled egg, scaly skin, and more efficient circulatory and respiratory systems.

29.1 Reptiles

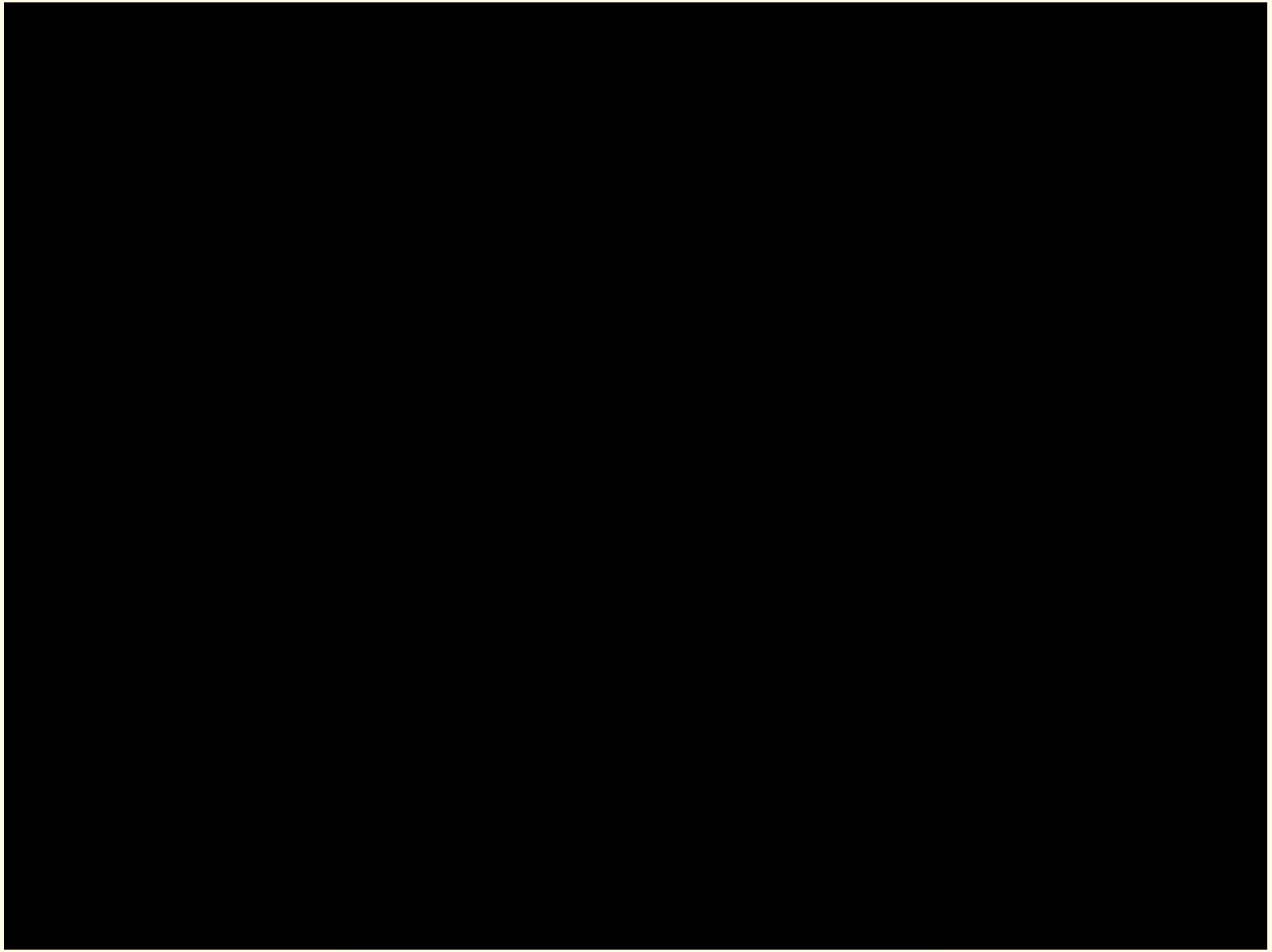
Amniotic Eggs

- The amnion is a membrane that surrounds a developing embryo.
- An amniotic egg is covered with a protective shell and has several internal membranes.



- The leathery shell protects the internal fluids and embryo.

Concepts In Motion



29.1 Reptiles

Dry, Scaly Skin

- Dry skin keeps reptiles from losing internal fluids to the air.
- A layer of external scales keeps reptiles from drying out.
- Some reptiles, like snakes, must shed their skins to grow.

29.1 Reptiles

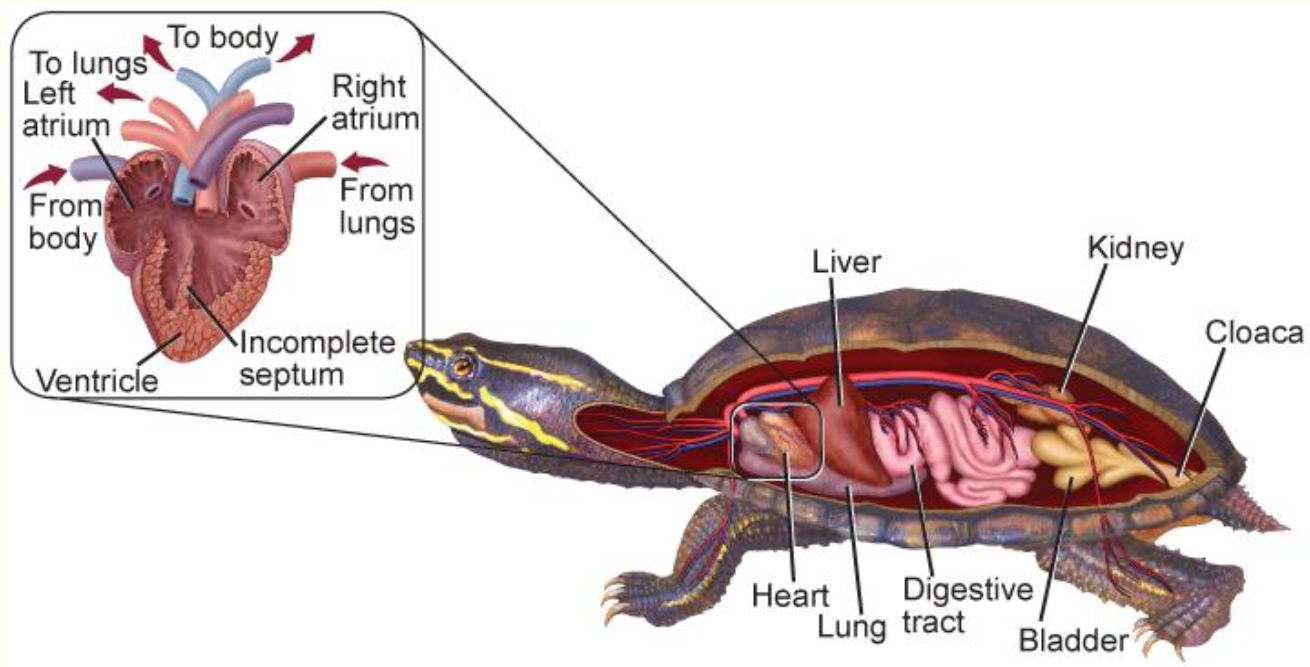
Respiration

- Reptiles depend on lungs for gas exchange.
- A reptile's lungs have a large surface area.
- With more oxygen, more energy can be released through metabolic reactions and made available for more complex movements.

29.1 Reptiles

Circulation

- Oxygen from the lungs enters into the circulatory system.
- Most reptiles have two separate atria and one ventricle.



29.1 Reptiles

Feeding and Digestion

- Most reptiles are carnivores, but some are herbivores.
- To make it easier to swallow prey whole, snakes have loosely jointed jaws that can spread apart to take in their food.

29.1 Reptiles

Excretion

- Kidneys filter the blood to remove waste products.
- Water reabsorption enables reptiles to conserve water and maintain homeostasis in their bodies.

29.1 Reptiles

The Brain and Senses

- Vision is the main sense in most reptiles.
- Some reptiles have tympanic membranes and others detect vibrations through their jaw bones.
- In snakes, Jacobson's organs in the mouth are used to sense odors.

29.1 Reptiles

Temperature Control

- Reptiles are ectotherms and regulate their body temperatures by basking in the sun for warmth or burrowing in the ground to cool off.

29.1 Reptiles

Movement

- Some reptiles move with limbs sprawled to their sides and push against the ground.
- Crocodiles have limbs rotated further under the body and can bear more weight and move faster.

29.1 Reptiles

Reproduction

- Reptiles have internal fertilization.
- After fertilization, the egg develops to form the new embryo and an amniotic egg.
- Most reptile eggs are buried and the sun incubates them.
- After laying their eggs, most females leave them alone to hatch.

29.1 Reptiles

Diversity of Modern Reptiles

Order of Reptiles	Example
Squamata	Lizards and snakes
Testudinata	Turtles and tortoises
Crocodilia	Crocodiles and alligators
Sphenodonta	Tuatara

29.1 Reptiles

Lizards and Snakes

- Lizards have legs with clawed toes.
- Lizards usually have moveable eyelids, a lower jaw with a moveable hinge joint, and tympanic membranes.

29.1 Reptiles

- Snakes are legless and have shorter tails than lizards.
- Snakes lack moveable eyelids and tympanic membranes.
- Like lizards, snakes have loosely-jointed jaws, and some snakes have venomous fangs.

29.1 Reptiles

Turtles

- A protective shell encases a turtle's body.
- The dorsal part of the shell is the carapace.
- The ventral part of the shell is the plastron.
- Many turtles can pull their head and legs inside their shells for protection from predators.

29.1 Reptiles

Crocodiles and Alligators

- Crocodilians have a four-chambered heart which delivers oxygen more efficiently.
- Crocodiles have a long snout, sharp teeth, and powerful jaws.
- Alligators generally have a broader snout than crocodiles.

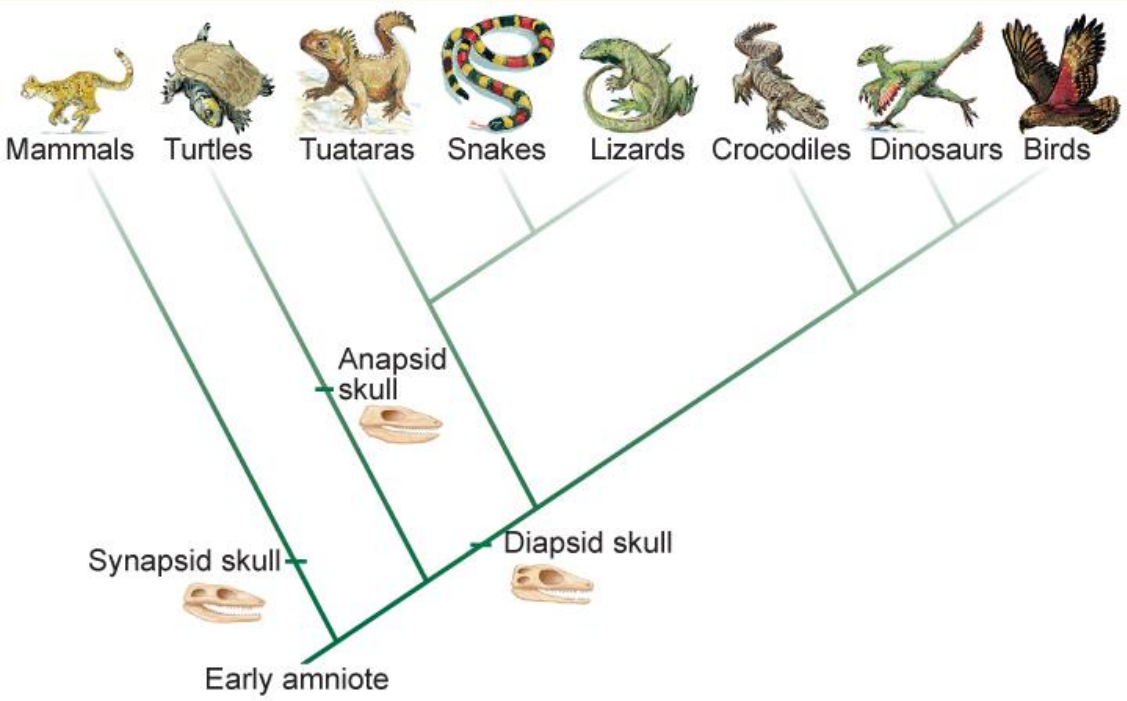
29.1 Reptiles

Tuataras

- Tuataras look like large lizards and are found on the islands off the coast of New Zealand.
- Tuataras have a “third eye” located on the top of their heads that can detect sunlight.
- Tuataras have two rows of teeth on the upper jaw.

29.1 Reptiles

Evolution of Reptiles



Online Virtual Lab

Dino Dig

Click here to proceed!

29.2 Birds

Characteristics of Birds

- Birds have feathers, wings, lightweight bones, and other adaptations that allow for flight.

29.2 Birds

Endotherms

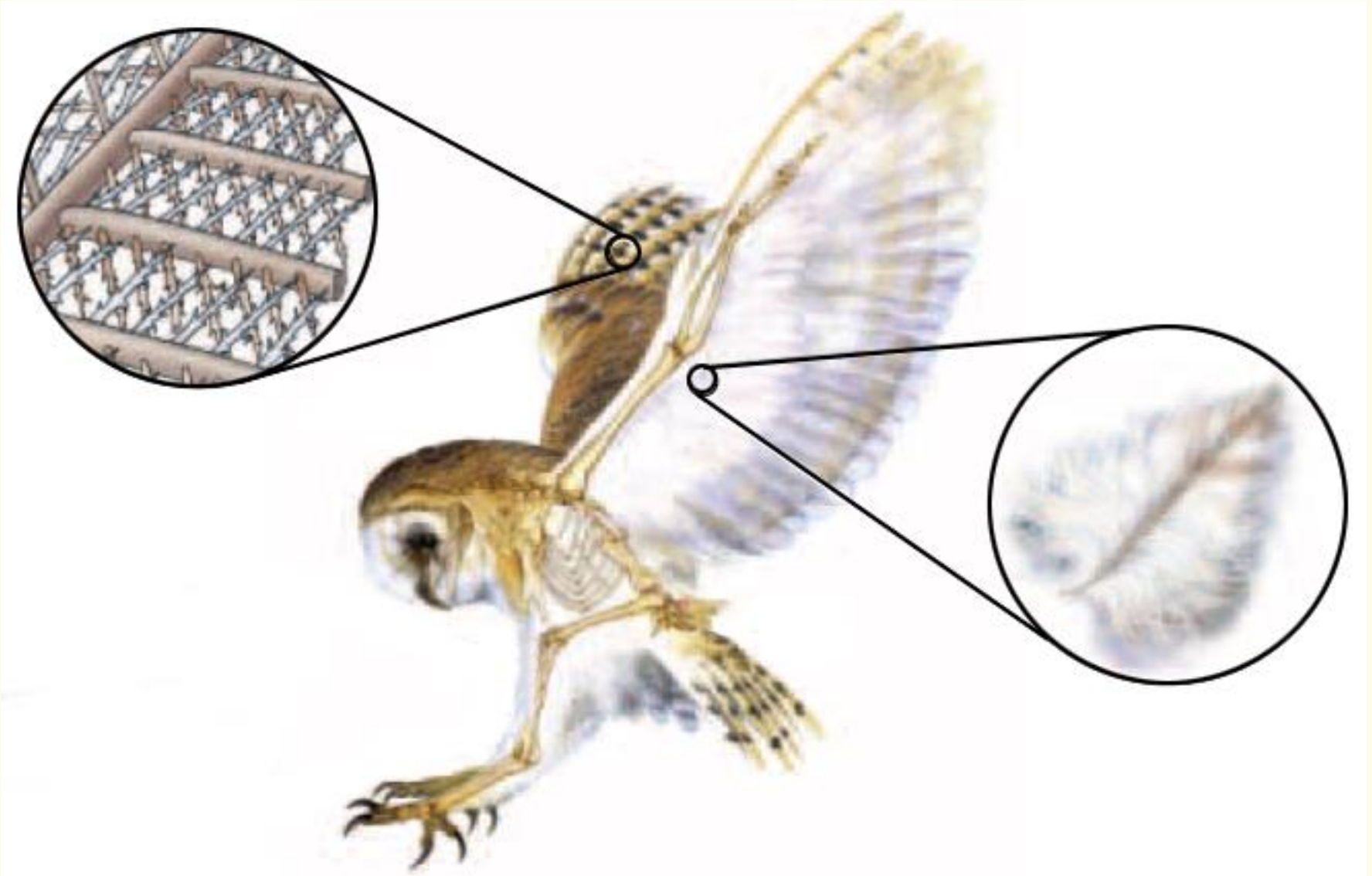
- Birds are endotherms, which means they generate body heat internally by their own metabolism.
- A high body temperature enables the cells in a bird's flight muscles to use large amounts of ATP needed for rapid muscle contraction during flight.

29.2 Birds

Feathers

- Birds are the only living animals to have feathers.
- Feathers have two main functions:
  - Flight
  - Insulation

29.2 Birds



29.2 Birds

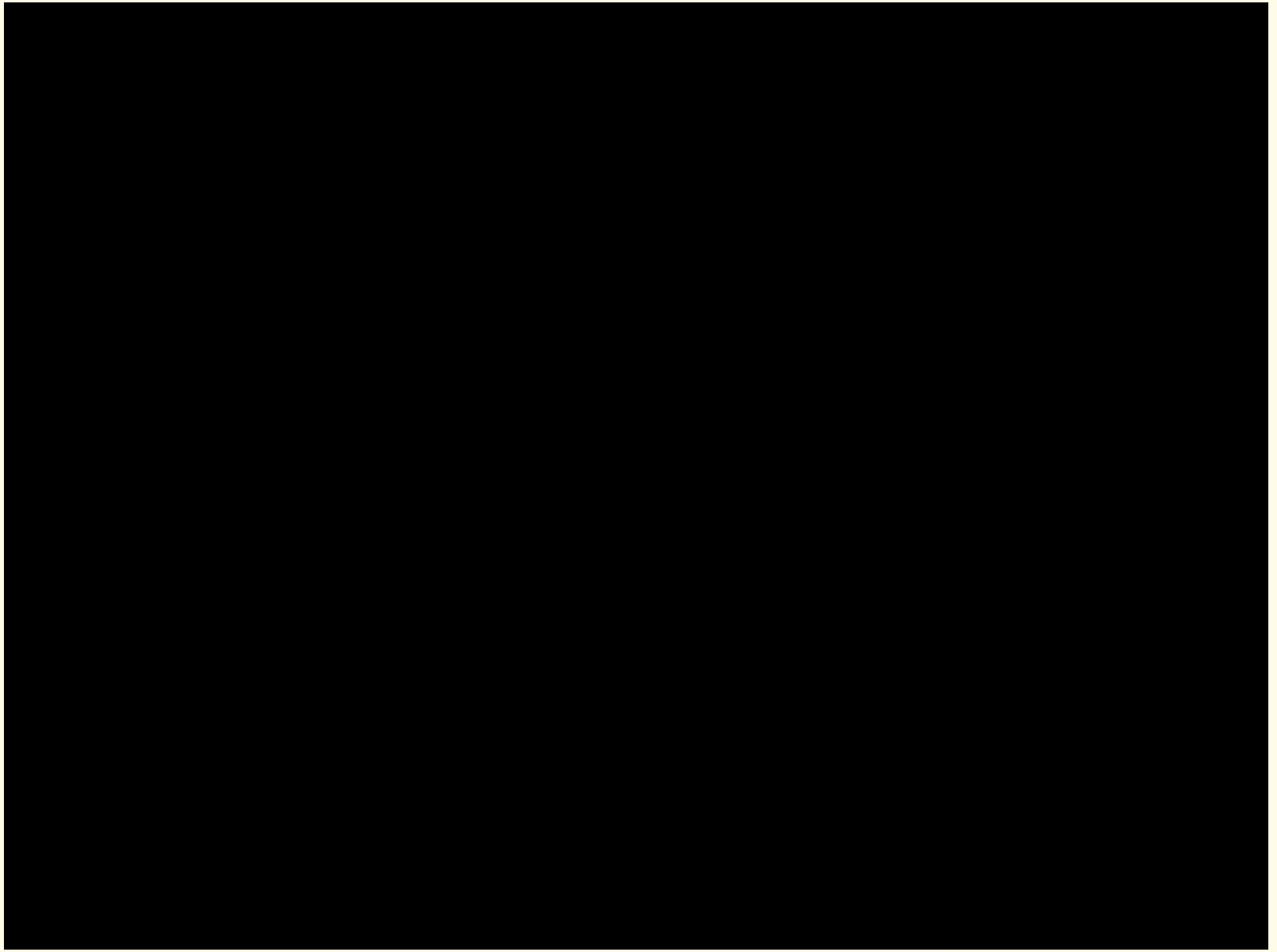
- Feathers that cover the body, wings, and tail of a bird are called contour feathers.
- Contour feathers consist of a shaft with barbs that and are held together by hooks.
- Down feathers are soft feathers located beneath the contour feathers.
- The preen gland secretes oil that adds a waterproof coating to the feathers.

29.2 Birds

Lightweight Bones

- A strong, lightweight skeleton allows birds to fly.
- The bones of birds are unique because they contain cavities of air.
- Large, powerful muscles attach to the sternum and keel.

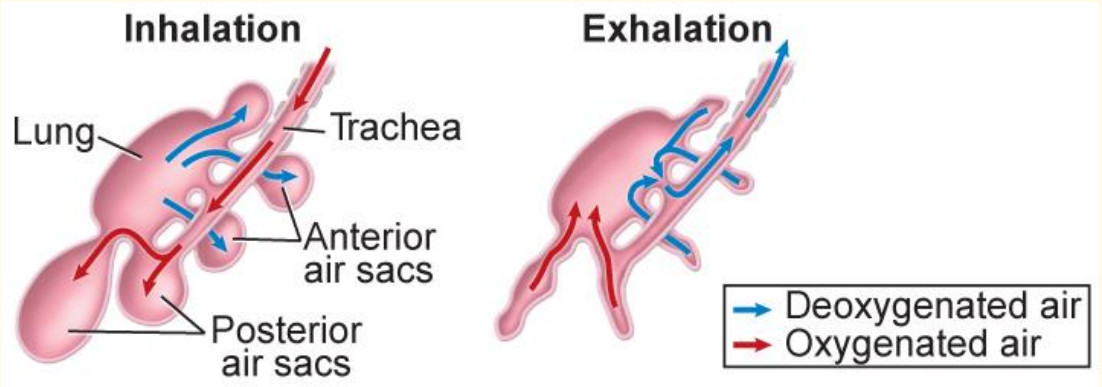
Concepts In Motion



29.2 Birds

Respiration

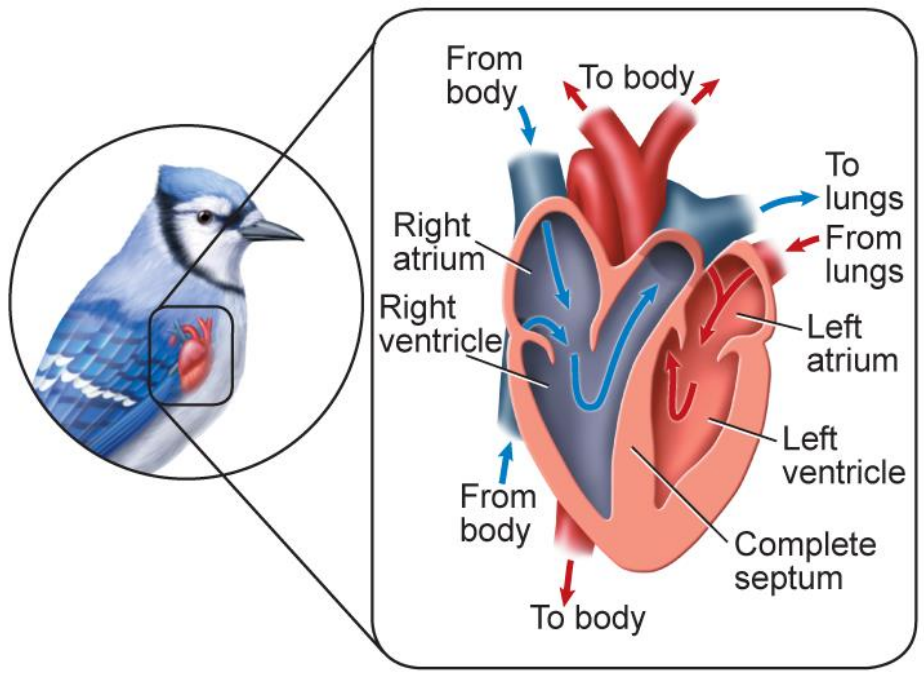
- Flight muscles use a large amount of oxygen.
- When a bird inhales, oxygenated air moves through the trachea into posterior air sacs.



- When a bird exhales, deoxygenated air leaves the respiratory system and oxygenated air is sent to the lungs.

29.2 Birds

Circulation



- A bird's circulatory system helps it maintain high levels of energy by efficient delivery of oxygenated blood to the body.
- Birds have a four-chambered heart.

29.2 Birds

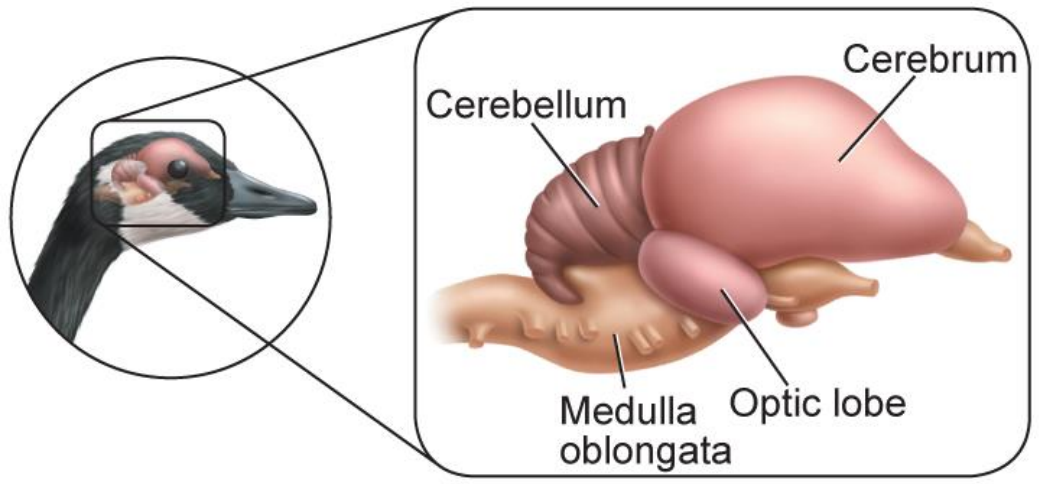
Feeding and Digestion

- Birds require large amounts of food to maintain their high metabolic rate.
- Many birds have a crop at the base of the esophagus that stores food.
- The gizzard contains small stones that crush food the birds have swallowed.

29.2 Birds

The Brain and Senses

- The cerebellum is large because birds need to coordinate movement and balance during flight.
- The cerebrum controls eating, singing, flying, and instinctive behavior.



29.2 Birds

- Birds have excellent vision.
- Birds of prey have eyes in the front of the head, which allows them to focus easily.
- Some birds have eyes on the sides, enabling them to see nearly 360 degrees.
- Birds also have a good sense of hearing.

29.2 Birds

Reproduction

- All birds have internal fertilization.
- After fertilization, the amniotic egg develops and is encased within a hard shell.
- Birds incubate the egg or eggs and feed the young after hatching.

29.2 Birds

Diversity of Bird Orders

Order	Example	Members	Distinguishing Characteristics
Passeriformes **Perching song-birds; about 5000 species**		Thrushes, warblers, mocking-birds, crows, blue jays, nuthatches, finches	Members of this order have feet that are adapted for perching on thin stems and twigs. Many birds in this order sing. The vocal organ, called the syrinx, is well-developed in these birds. Other species, such as crows and raven, do not sing.
Piciformes **Cavity-nesters; about 380 species**		Woodpeckers, toucans, honey-glides, jacamars, puffbirds	Members of this order have highly specialized bills that are related to their feeding habits. They all build nests in cavities—for example, a hole in a dead tree. The feet have two toes that extend forward and two toes that extend backward, allowing them to cling to tree trunks.
Ciconiiformes **Wading birds and vultures; about 90 species**		Herons, egrets, bitterns, storks, flamingoes, ibises, vultures	Members of this order are medium- to large-sized birds that have long necks and long legs. Most are wading birds that live in large colonies in wetlands. Vultures are closely related to storks but are detri-tovores.
Procellariiformes **Marine birds; about 100 species**		Albatrosses, petrels, shearwa-ters, storm-petrels	All members of this order are marine birds. They have hooked beaks that aid in feeding on fish, squid, and small crustaceans. They all have tube-shaped nostrils located on the top of their beaks. Many have webbed feet.

29.2 Birds

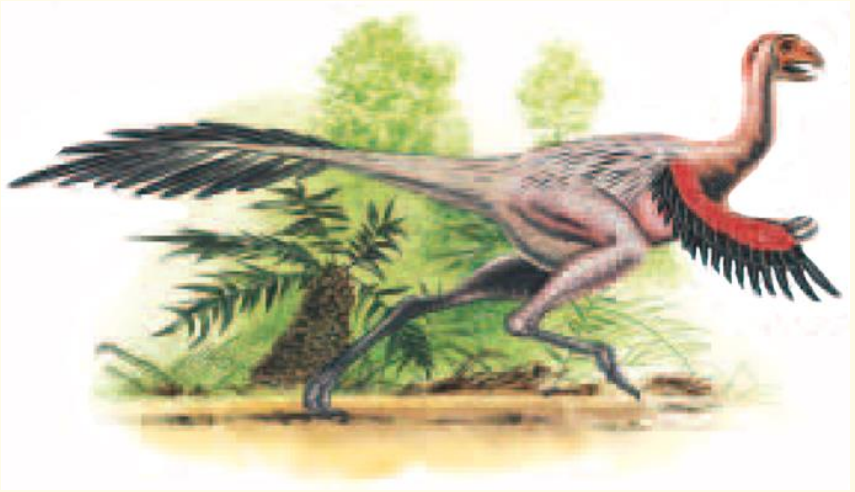
Diversity of Bird Orders

Order	Example	Members	Distinguishing Characteristics
Sphenisciformes **Penguins; about 17 species**		Penguins	Penguins are marine birds that use their wings as flippers to swim through the water rather than fly. The bones of penguins are solid, lacking the air spaces of other birds. All species are found in the southern hemisphere.
Strigiformes **Owls; about 135 species**		Owls	Owls are nocturnal birds with large eyes, strong, hooked beaks, and large, sharp talons on their feet. All of these adaptations aid in capturing prey. Many species have feathers on their legs. Owls are found worldwide except for Antarctica.
Struthioniformes **Flightless birds; 10 species**		Ostriches, kiwis, cassowaries, emus, rheas	All members of this order have reduced wings and are flightless birds. The ostrich is the largest living bird, reaching a height of over 2 m and a weight of 130 kg. All species are found in the southern hemisphere.
Anseriformes **Waterfowl; about 150 species**		Swans, geese, ducks	Members of this order live in aquatic environments. They have webbed feet to aid in moving through the water. They feed on aquatic plants and sometimes crustaceans or small fish using broad, round beaks.

29.2 Birds

Evolution of Birds

- Fossil evidence shows that birds evolved from the same line as crocodiles and dinosaurs.



Archaeopteryx

- *Archaeopteryx* was an ancient bird with a reptile-like tail, clawed fingers on the wings, teeth, and a body covered with feathers.

Chapter Resource Menu

Chapter Diagnostic Questions

Formative Test Questions

Chapter Assessment Questions

Standardized Test Practice

biologygmh.com

Glencoe Biology Transparencies

Image Bank

Vocabulary

Animation

Click on a hyperlink to view the corresponding lesson.

Chapter Diagnostic Questions

CheckPoint

Which is *not* a characteristic of birds?

A. ectotherm

B. light-weight bones

C. amniotic eggs

D. scales covering legs

Chapter Diagnostic Questions

CheckPoint

Which is *not* an accurate description of a snake's feeding methods?

A. carnivorous

B. tongue assists in swallowing

C. venom paralyzes and digests

D. skull bones and jaw joined loosely

Chapter Diagnostic Questions

CheckPoint

Which is *not* a feature of lizards?

A. tympanic membrane

B. lack of moveable eyelids

C. claws

D. hinged lower jaw

29.1 Formative Questions

CheckPoint

Which animal does *not* have an amnion that surrounds its developing embryo?

A. hawk

B. human

C. salamander

D. squirrel

29.1 Formative Questions

CheckPoint

What does a snake detect with its Jacobson's organs?

A. heat

B. odors

C. sounds

D. visual images

29.1 Formative Questions

CheckPoint

Which term describes the way reptiles maintain their internal temperature?

A. ectothermic

B. exothermic

C. homeodermic

D. thermodermic

29.1 Formative Questions

CheckPoint

What do snakes use for hearing?

A. carapace

B. jaw bones

C. plastron

D. tympanic membranes

29.2 Formative Questions

CheckPoint

How do birds maintain body heat?

A. amnionically

B. externally

C. internally

D. superficially

29.2 Formative Questions

CheckPoint

What are feathers made of?

A. calcium

B. chitin

C. collagen

D. keratin

29.2 Formative Questions

CheckPoint

What organ in birds reabsorbs water from uric acid?

A. cloaca

B. bladder

C. kidney

D. pancreas

29.2 Formative Questions

CheckPoint

What is the term that means “to maintain favorable conditions for hatching”?

A. gestation
B. incubation
C. maturation
D. pregnancy

Chapter Assessment Questions

CheckPoint

What is the function of Jacobson's Organs?

A. feeding

B. breathing

C. ejecting venom

D. sensing odors

Chapter Assessment Questions

CheckPoint

Which reptile mother can keep its eggs inside its body until they hatch?

A. turtle

B. crocodile

C. snake

D. tuatara

Chapter Assessment Questions

CheckPoint

Which correctly describes a bird's circulatory system?

A. two atria and one ventricle

B. four chambered heart

C. incomplete septum

D. single loop system

Standardized Test Practice

CheckPoint

Which is a key adaptation that enables reptiles to live on land?

A. Eggs have shells.

B. Eggs are fertilized internally.

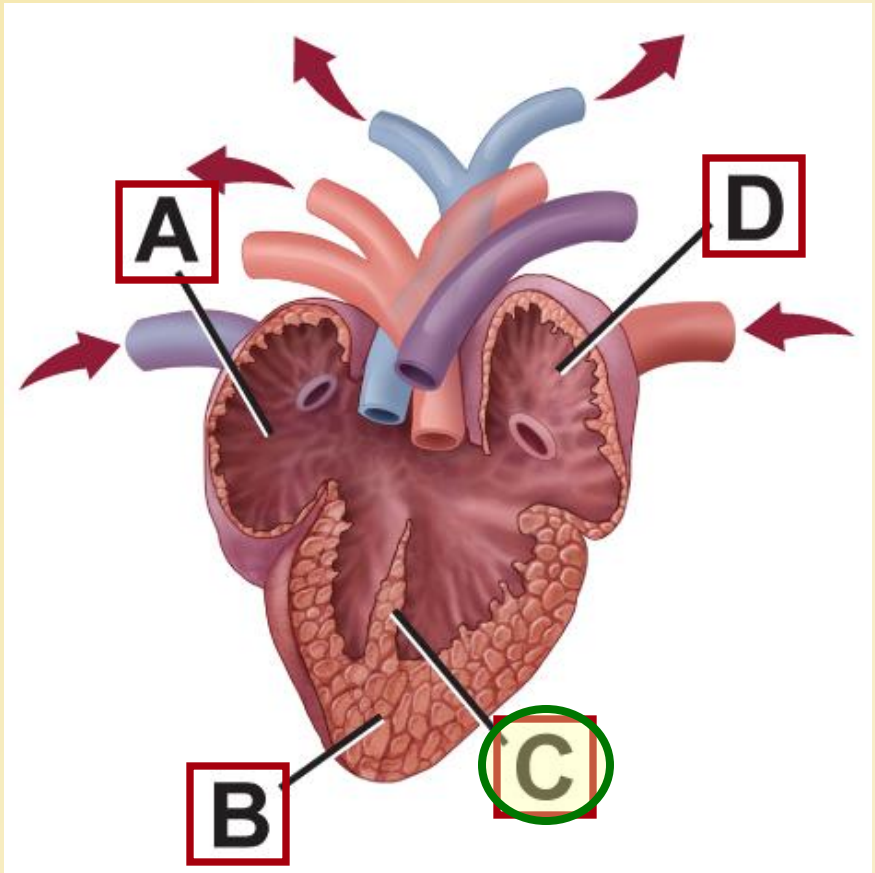
C. Eggs are released in large numbers.

D. Eggs hatch outside the female's body.

Standardized Test Practice

CheckPoint

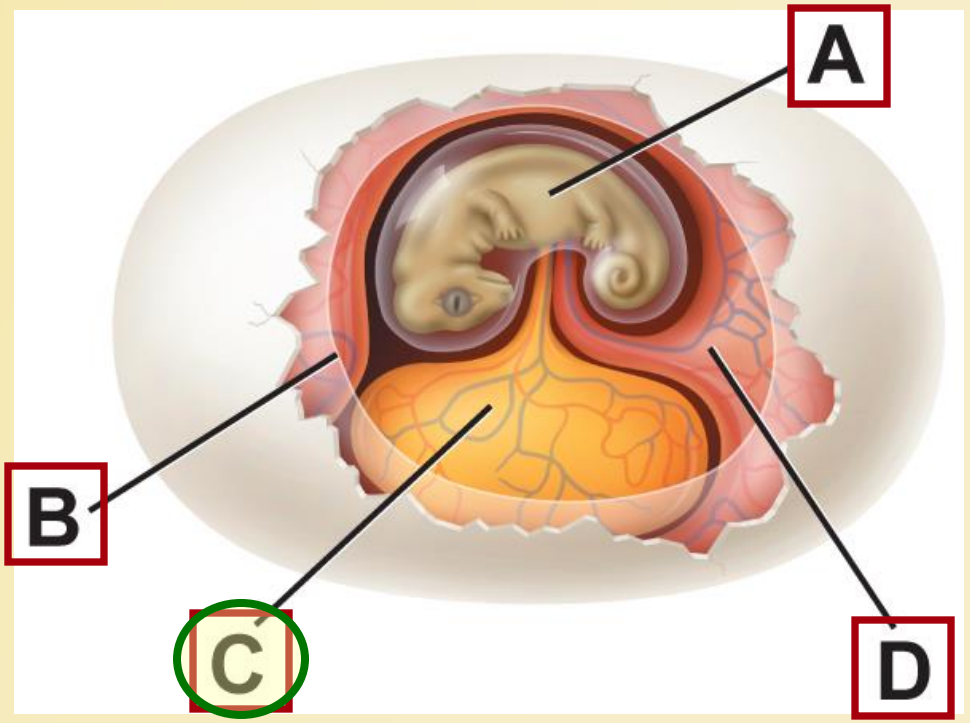
Which structure makes the reptile heart more efficient than the heart of amphibians?



Standardized Test Practice

CheckPoint

Which membrane contains food that provides nutrition to the embryo?



Standardized Test Practice

CheckPoint

How does the cloaca enable reptiles to maintain homeostasis?

A. It filters blood to remove waste.

B. It reabsorbs water and minerals.

C. It secretes hormones and enzymes.

D. It improves gas exchange in the lungs.

Standardized Test Practice

CheckPoint

Why do birds have a large cerebellum in their brain?

A. to control behavior

B. to coordinate visual input

C. to sense tastes and smells

D. to carry out complex movement

Standardized Test Practice

CheckPoint

What does a bird's gizzard do?

A. absorb nutrients

B. crush food

C. store food

D. secrete enzymes

Standardized Test Practice

CheckPoint

What type of feathers provides insulation for birds?

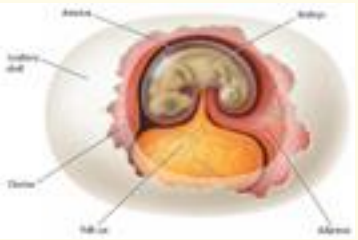
A. cavity feathers

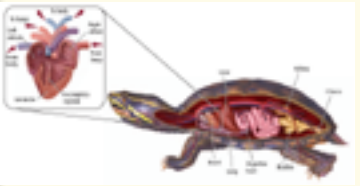
B. contour feathers

C. down feathers

D. preen feathers

Glencoe Biology Transparencies





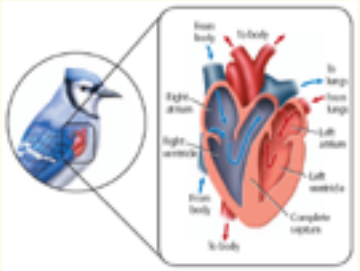
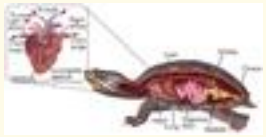


Image Bank



Diversity of Modern Reptiles	
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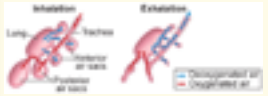

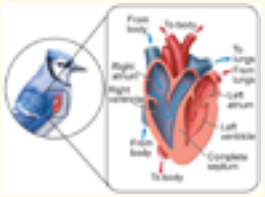

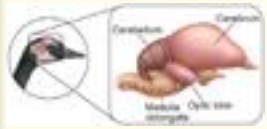

Image Bank

Vocabulary

Section 1

- amnion
- amniotic egg
- Jacobson’s organ
- carapace
- plastron

Vocabulary

Section 2

- endotherm
- feather
- contour feather
- preen gland
- down feather
- sternum
- air sac
- incubate

Animation

Concepts In Motion

- Amniotic Egg
- Flight
- Visualizing Feeding and Digestion