Reproduction

Reptilian eggs are fertilized inside the female through internal fertilization. Internal fertilization protects the gametes from drying out on land. Many reptiles are **oviparous,** which means that the young hatch from eggs that are laid outside of the mother's body. Most snakes and lizards and all turtles, tortoises, and crocodilians are oviparous. The eggs of most reptiles are not protected by the parents. However, mother alligators and crocodiles will guard their nests aggressively and care for their young. In addition, some snakes and lizards are **ovoviviparous,** which means that fertilized eggs remain inside the female's body for a long time and often hatch inside the mother. By keeping eggs inside their body, ovoviviparous reptiles protect their eggs from predators.

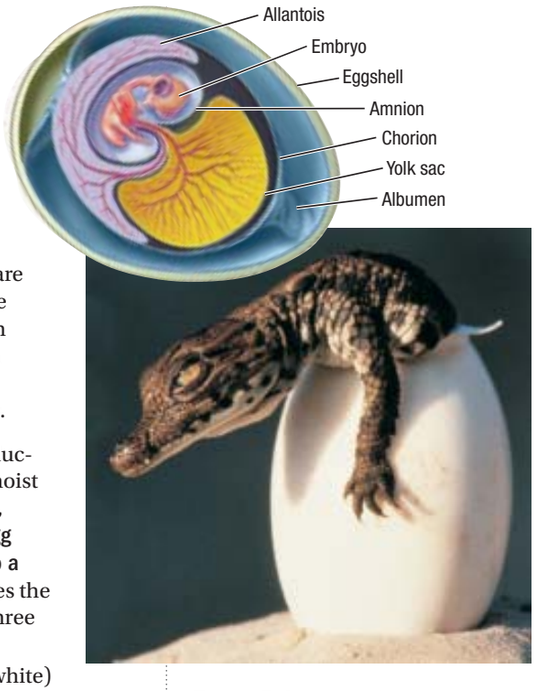


Figure 5 Reptiles and birds have very similar eggs. This bird's egg (left) shows the main structures of the amniotic egg. This young crocodile (right) used a tooth on the tip of its snout, called an *egg tooth*, to break open its egg.

Amniotic Egg For a reptile living on dry land, reproduction presents a serious water-loss problem. Without a moist environment, eggs dry out. Recall that the amniotic egg, shown in **Figure 5,** solves this problem. **› An amniotic egg contains both a water supply and a food supply and is key to a reptile's success as a terrestrial animal.** A tough shell makes the egg essentially watertight. Most reptiles, all birds, and three mammal species reproduce by using amniotic eggs.

In an amniotic egg, the shell and the albumen (egg white) protect and cushion the developing embryo. The albumen is also a source of nutrients for the embryo. Within the egg, four specialized membranes maintain a stable environment for the embryo. The amnion cushions the embryo in a watery environment. The yolk sac contains the embryo's main food supply. Blood vessels connect the embryo's gut to the yolk sac. The allantois stores waste and is the embryo's organ for gas exchange. The chorion allows oxygen to enter the egg and allows carbon dioxide to leave the egg.

› Reading Check ***Summarize the structure of an amniotic egg.***

Section 1 Review

› KEY IDEAS

1. **Identify** seven characteristics of reptiles.
2. **Describe** how being ectothermic influences a reptile's lifestyle.
3. **Explain** how reptiles meet their need for oxygen.
4. **Summarize** how the amniotic egg allows reptiles to live on land.

CRITICAL THINKING

5. **Drawing Conclusions** Crocodiles have a heart with a completely divided ventricle. How does this heart structure affect a crocodile's circulatory system?
6. **Making Inferences** Do you think that a reptile that cares for its young lays more or fewer eggs than a reptile that doesn't care for its young? Explain your answer.

METHODS OF SCIENCE

7. **Forming Hypotheses** Several species of ovoviviparous reptiles live in colder climates than most other reptiles do. Why might ovoviviparity be advantageous in such climates?

› Close

Formative Assessment

How are the heart and lungs of a reptile better adapted to life on land than those of an amphibian?

A. Unlike amphibians, reptiles have lungs with many folds. They have the same type of heart. (Incorrect. Reptile hearts have partially divided ventricles. Review Figure 4.)

B. Amphibians and reptiles have the same lung structure, but reptiles pump oxygenated blood more efficiently than amphibians. (Incorrect. Reptile lungs have many folds, allowing more surface area for oxygen exchange.)

C. Reptiles have lungs with many folds and a heart with at least a partially divided ventricle. (Correct. The folds allow better oxygen exchange and the heart pumps oxygenated blood more efficiently.)

D. Amphibians and reptiles take in oxygen through their skin and lungs. They both pump blood with a partially divided heart. (Incorrect. Reptiles cannot breathe through their skin.)

Answers to Section Review

1. strong, bony skeletons, and toes with claws; ectothermic metabolism; dry, scaly skin that is almost watertight; amniotic eggs; well-developed lungs; partly or completely divided ventricle in the heart; internal fertilization
2. Because they are ectotherms, reptiles must regulate body temperature through their activities. They are physically active and hunt for food only when their body temperature is within a certain critical range.
3. In contrast to amphibians, reptiles have well-developed lungs with numerous folds as well as strong rib muscles.
4. The almost watertight amniotic egg of a reptile minimizes water loss on land. The yolk also contains nourishment for the developing embryo.
5. This arrangement fully separates the lung circulation from the body circulation. Thus, the delivery of oxygen throughout the body is even better in crocodiles than in other reptiles.
6. Sample answer: A reptile that cares for its young would lay fewer eggs because more offspring would survive.
7. Because the young are carried inside the body, they stay warm from the mother's muscular movements and basking behavior.