Reproductive system of **REPTILES**

Reptiles


REPTILE
TERRESTRIAL
AXIAL
PYTHONS
SHUNTED
VERTEBRATE
SMALL
SNAKES
BONY

What is a Reptile

Reptiles are cold-blooded, air-breathing vertebrates, a group that includes : snakes, lizards, turtles, tortoises, crocodiles and alligators. Most hatch from eggs

Male reproductive system

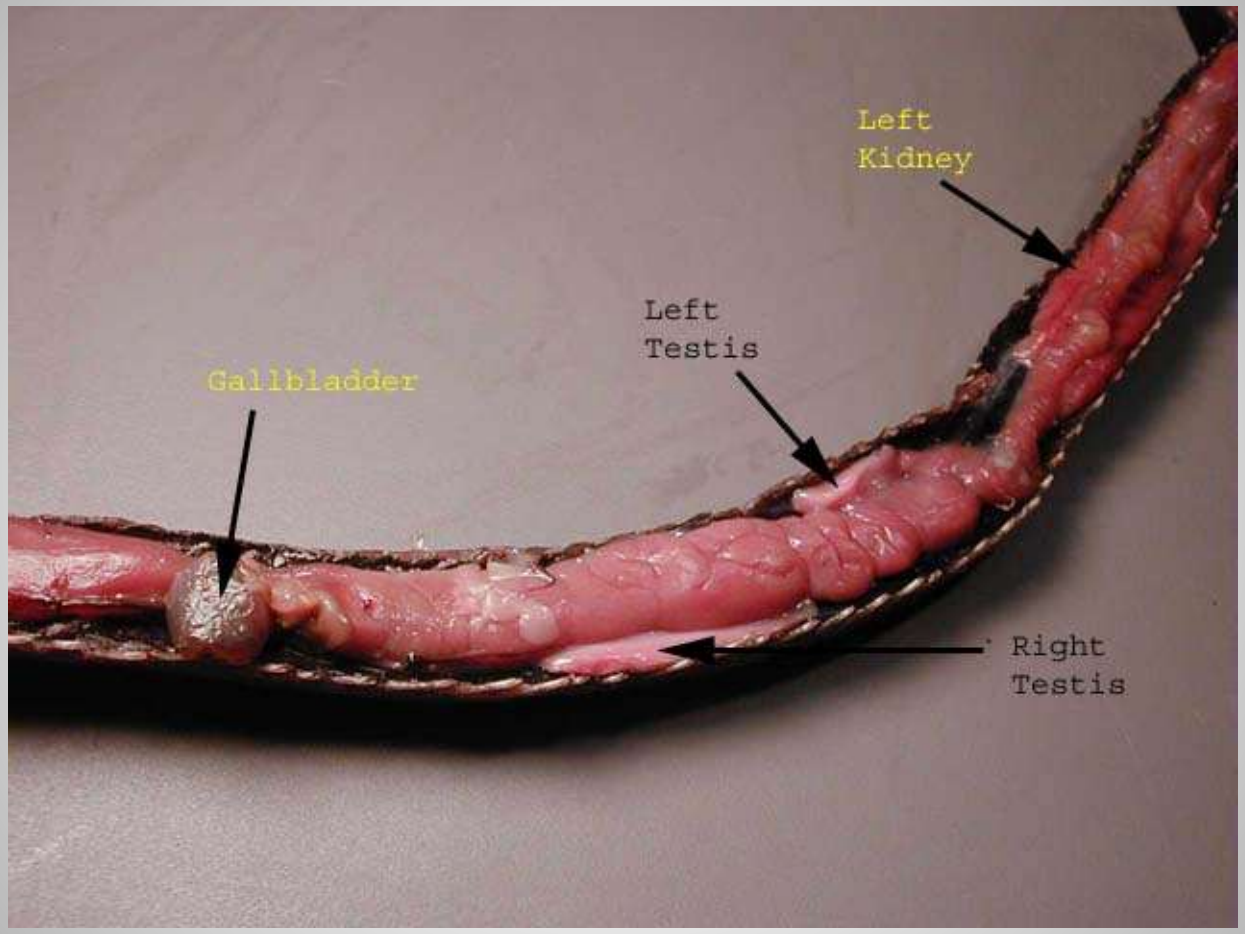
The male reproductive system of most vertebrate animals consists of two testis with sperm-conveying duct and attend auxiliary glands associated with each testis.

In some species, such as the frog and many teleost fishes, the sperm-conveying duct is simple structure, but in most vertebrate forms there is a tendency for the duct to be complicated

In reptiles, some birds, and all mammals an intromittent organ is added to the sperm-conveying structures for the purpose of internal fertilization.

1-The testes

The testes are paired organs suspended by mesorchia. In lizard the fat bodies are present but these don't appear essential for spermatogenesis if the animal receives sufficient food


Left
Kidney
Left
Testis
Gallbladder
Right
Testis

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2-The seminiferous tubules

The testis contain seminiferous tubules and Leying cells, which are usually located among the tubules.

The arrangement of the ductuli efferents varies among reptiles. **In snakes**, several seminiferous tubules drain into one ductule , and the ductuli are arranged along the length of the testis; **in lizards**, they are reduced to a single marginal canal

3-The epididymis

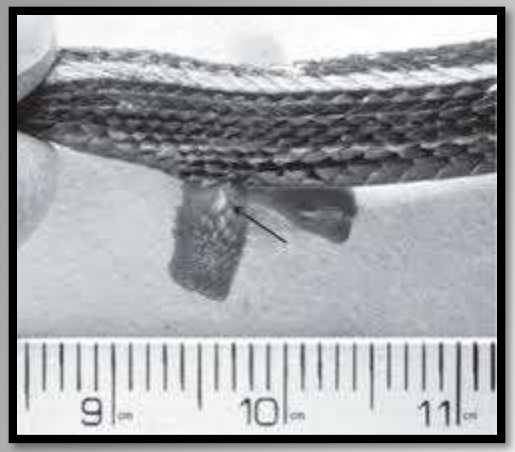
is large in lizard and turtles; in snakes the size of epididymis varies with the species.

In reptiles, the kidney has a sexual segment, the function of this segment and its secretions have not been determined but they may help separates semen from urine by blocking renal tubules and the ureter during copulation

4- Penis

Male lizard and snakes have a paired hemi-penis the two arms of which are caudal extensions of the cloaca, each of which can be everted independently of the other into the cloaca of the female.

During copulation, the sperm run along an external groove, and the spermatic sulcus of the hemi-penis into the female's cloaca. Spines or ridges help to maintain intromission.


9
10
11


Furcifer Pardalis Hemipenis
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14/04/2009

- **Female reproductive system**:

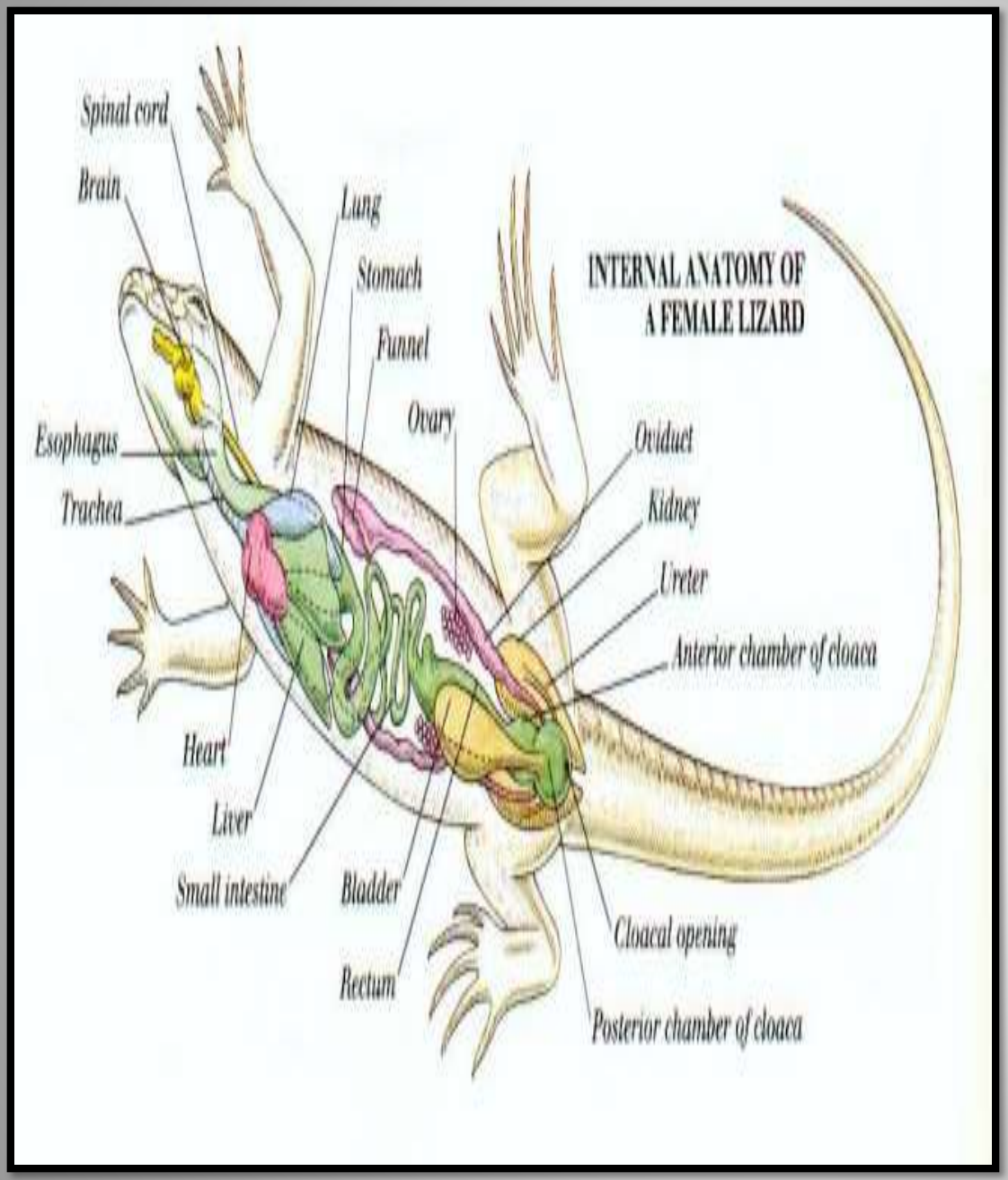
1-Ovary

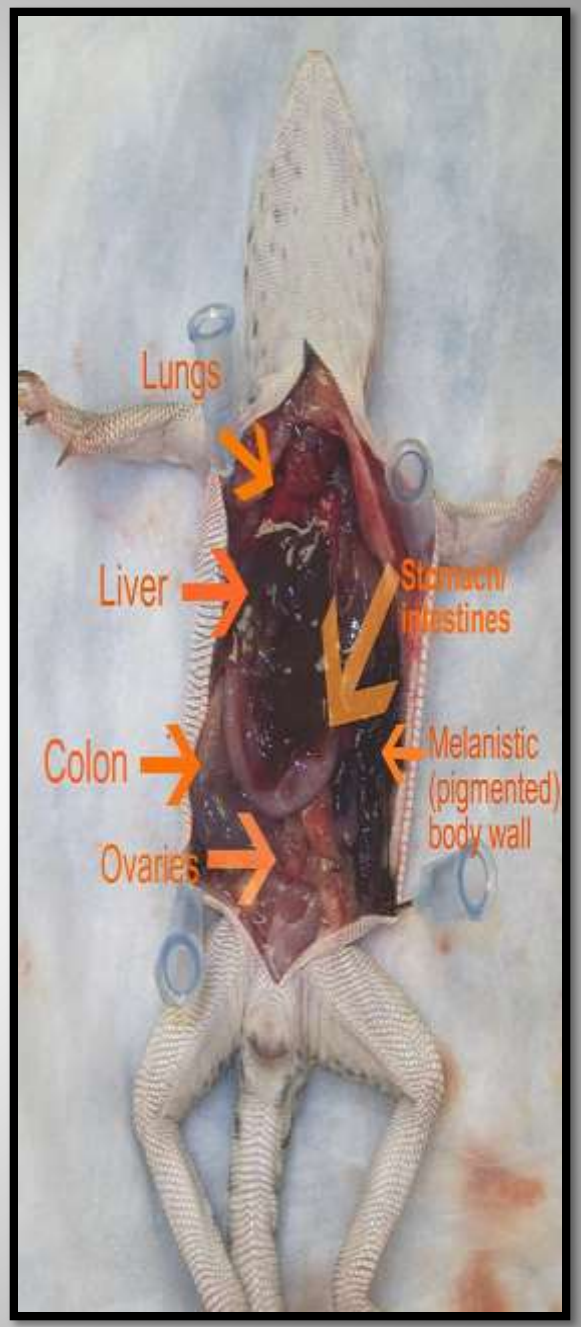
- The ovaries are paired, hollow organs suspended by mesorchia and with squamous epithelium lining the ovarian cavity.

- The follicles project from short stalks and the walls surround the large yolk, consist of granulosa layer, a theca interna and a theca externa.

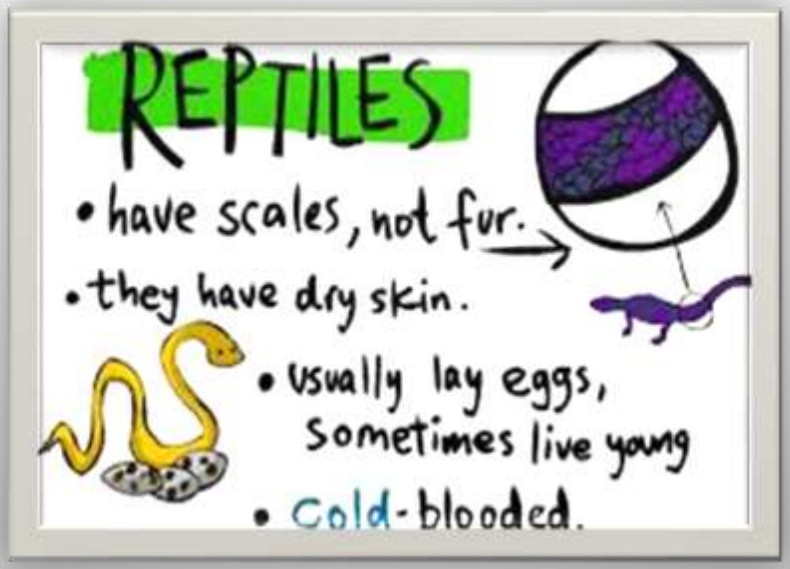
2-Corpora lutea

- Corpora lutea are formed after ovulation as the result of luteinization and proliferation .


INTERNAL ANATOMY OF
A FEMALE LIZARD
Spinal cord
Brain
Lung
Stomach
Funnel
Ovary
Oviduct
Esophagus
Trachea
Kidney
Ureter
Anterior chamber of cloaca
Heart
Liver
Small intestine
Bladder
Rectum
Cloacal opening
Posterior chamber of cloaca


Lungs
Liver
Stomach/
intestines
Colon
Melanistic
(pigmented)
body wall
Ovaries

- In oviparous species the corpora lutea regress soon after oviposition.
- Abdominal fat bodies found in all temperate zone reptiles.
- There is relationship between ovary and fat bodies because ovariectomy prevents rapid fat mobilization from the fat bodies



3-The oviducts

The oviducts, which are Mullerian ducts are convoluted.
They consist of:

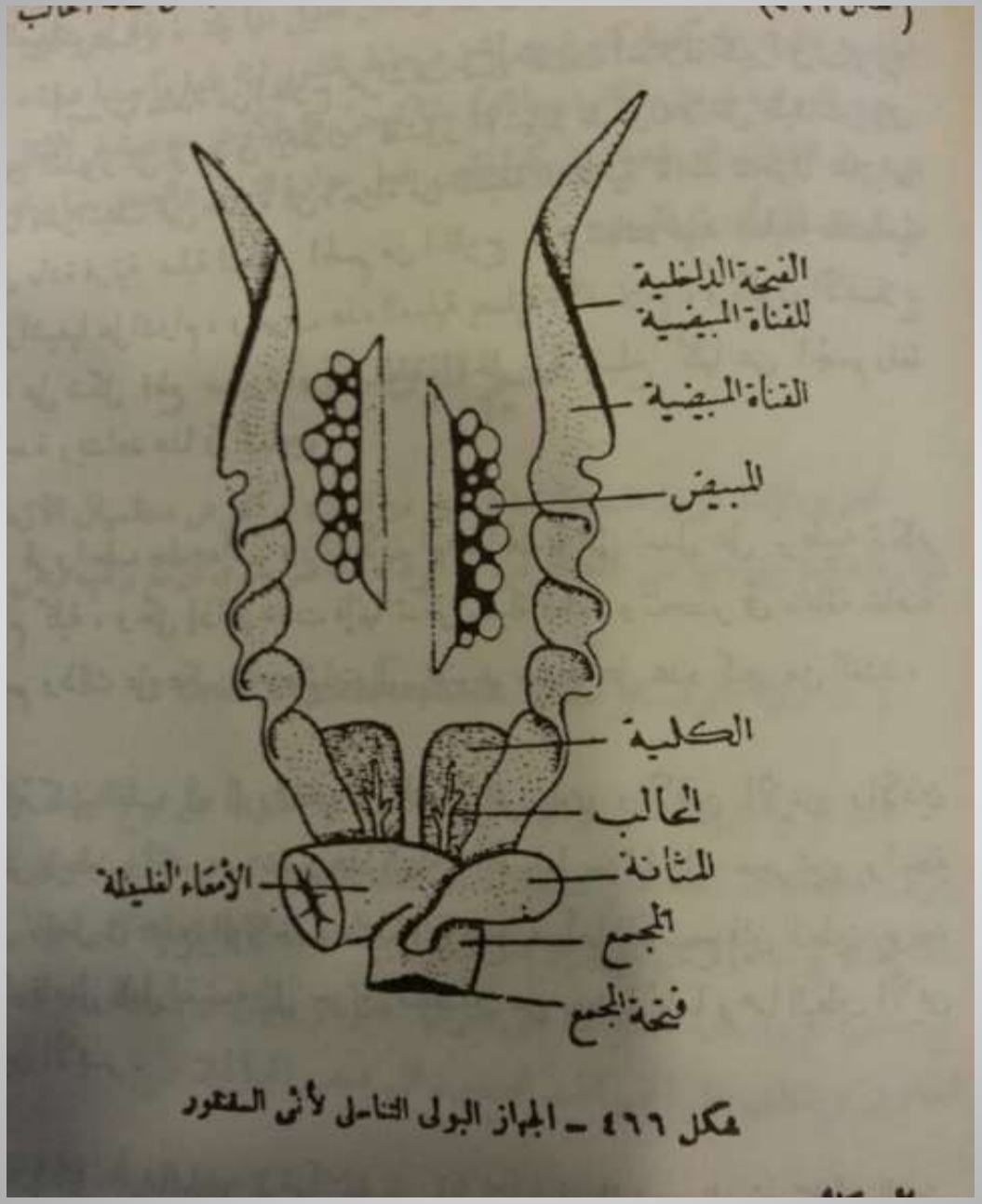
1- An infundibulum or **funnel**.

2- A **convoluted segment** with a layer of longitudinal and a layer of circular muscle, and a mucosa with many alveolar glands and ciliated epithelium.

3- An **isthmus**.

4- A **uterine** segment which has a strong musculature and is lined with ciliated and nonciliated columnar epithelium.

5- A **vagina** which has mucous glands and traverses the cloaca.



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Methods of sperm transport within the female reproductive tract

❖**1)** When fertilization is in the lower or posterior portion of the genital tract:

Many of the urodele amphibia, fertilization is affected apparently in the caudal areas of the female genital tract or as the eggs passes through the cloacal region.

❖**2)** When fertilization occurs in the upper extremity of the oviduct:

In several species of **salamanders**, fertilization of the egg and development of the embryo occur within the oviduct.

In the **painted turtle**, *chrysems picta*, sperm are deposited within the cloacal area of the female during copulation; from the cloaca they pass into the vaginal portion of the oviduct and then into the uterus.

It is possible that muscular contractions, antiperistaltic in nature, propel the sperm from the cloaca through the vagina and into the uterus.

Sperm survive within the uterus of garter snake for three or more months while in turtle, *Malaclemys centrata*, a small percentage of fertile eggs were obtained from females after four years of isolation

❖**3)** when fertilization occurs in the ovary :

In certain viviparous fishes the egg is fertilized in the ovary.

As the sperm survive for

months in the female tract,

sperm transport is due

probably to the movements

of the sperm themselves

As spermatozoa have unusually long functional survival time in reptilian female reproductive system, synchronization of ovulation and copulation are not essential.

In some reptiles, the spermatogenetic activity and endocrine activity may be desynchronized.

Phermonal & Hormonal effects

Testosterone is probably produced by Sertoli cells because by histological criteria, the Leydig cells appear to be inactive at the time of high testosterone titers.

Phermones are used to enable males to be attracted to and identify female snakes. when male snakes had their estrogen levels elevated, their pheromone production was so strong that other male snakes actually preferred them to small female snakes

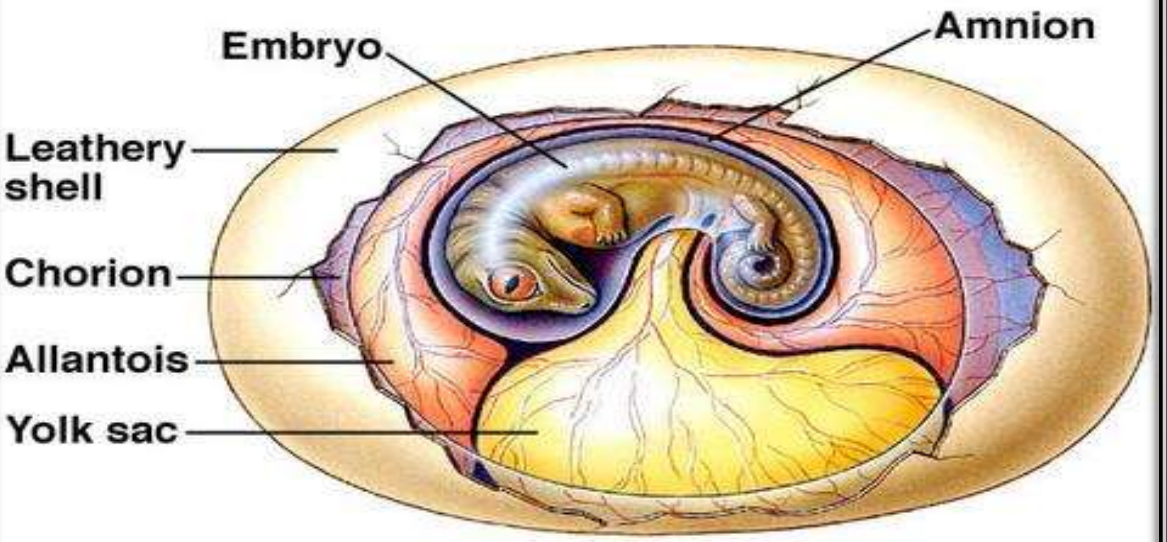
The egg

Within the reptile egg the embryo develops using the yolk as a source of proteins and respiratory substrates and the albumen as a source of water .

The allantois grows out to touch the chorion and provides the site for the uptake of oxygen and the release of carbon dioxide through the porous shell.

The development of a shell to counteract the force of gravity on the soft materials of the egg necessitated the provision of an egg-tooth or a special horny modification on the head to enable the young to break out of the egg.

Amniotic Egg of Reptile



Parental care

The parental care given after birth is very limited, although the eggs of reptiles need warmth for their development and this is often provided by the mother.

A very few reptiles, mainly lizards living in colder habitats, are viviparous and in few cases there is an exchange of metabolites between mother and offspring

Many species dig holes in which the eggs are placed, whereas others bury them under leaf litter or deposit them in crannies of trees or caves .
Care of the embryo and young is not common in reptiles with some exceptions, however.

The skins of the genus Eumeces lay their eggs and protect them and also warm them by basking in the sun and then coiling around the eggs to transfer heat to them .

Some pythons coil themselves around the eggs and brood them for about 100 day,
leaving them only to eat, drink and molt.

Cobras and the American mudsnakes also guard their eggs.

The American alligator guards the nest and when the young hatch and make a grunting noise, the mother may help them out of the nest.

Environmental effects

- Changes in air temperatures (particularly night temperatures) may affect the metamorphosis rates and reproductive patterns of certain reptile
- Horned lizards also burrow under the ground during the winter months, when they hibernate.
- Some female usually lay their eggs in the evening or at night.