Animal Reproduction

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Key Points: Reproduction in Vertebrates

- What are Vertebrates?
- Internal vs External Fertilisation
- Ovipary; Vivipary and Ovovivipary
- Amniotic Egg
- Precocial vs Altricial Development
- Parental Care

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Question
What are Vertebrates?

Answer
A large group of animals distinguished by the possession of a backbone and internal skeleton including fish, amphibia, reptiles, birds and mammals.

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Question

What is the difference between **External** and **Internal** Fertilisation?

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Answer

- **External fertilisation** is a mode of reproduction in which a male's sperm cells fertilise ova **outside** of the female body. Eg fish lay eggs in water and male deposits sperm over the eggs.

- **Internal fertilisation** is when the sperm and ovum combine **inside** the body of the female.

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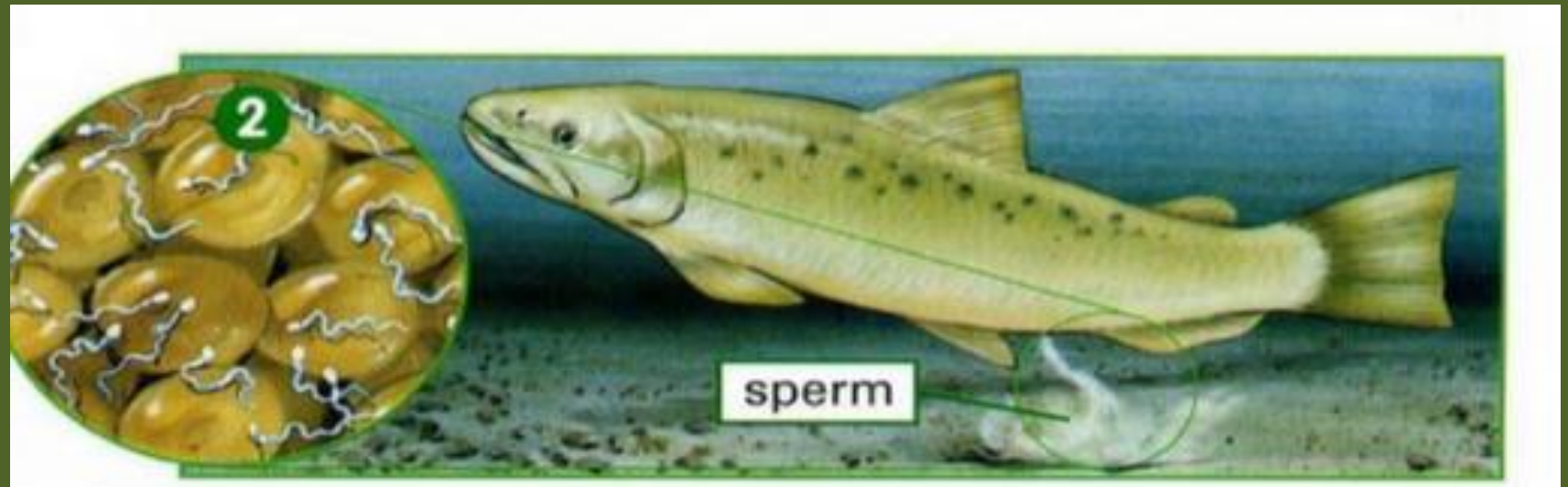
External Fertilisation



Fertilisation is external in salmon. The female deposits her ova on the riverbed (1). The male then deposits his sperm in the water and they swim to fertilise the ova (2).

Picture from www.majordifferences.com

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External fertilisation: Advantages

- Spawning leads to greater genetic variation.
- No energy required from the female during the incubation period.
- Eggs do not dehydrate in an aquatic environment.

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External fertilisation: Disadvantages

- Eggs are exposed to harsh conditions and predators.
- Fertilisation is left to chance because the current can wash sperm away.
- Large quantity of male and female gametes required.

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Internal fertilisation: Advantages

- The fertilised ovum is well protected.
- It increases the probability of fertilisation.
- Specific mate selection.
- The developing embryo is not exposed to external risks such as predation.

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Internal fertilisation: Disadvantages

- Smaller number of offspring.
- Great amount of energy required from the female during gestation.

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Ovipary, Vivipary and Ovovivipary

What is the difference?

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Oviparity

The expulsion of undeveloped eggs. Eggs may have been fertilised before release, as in birds and some reptiles, or are to be fertilised externally, as in amphibians and fish.

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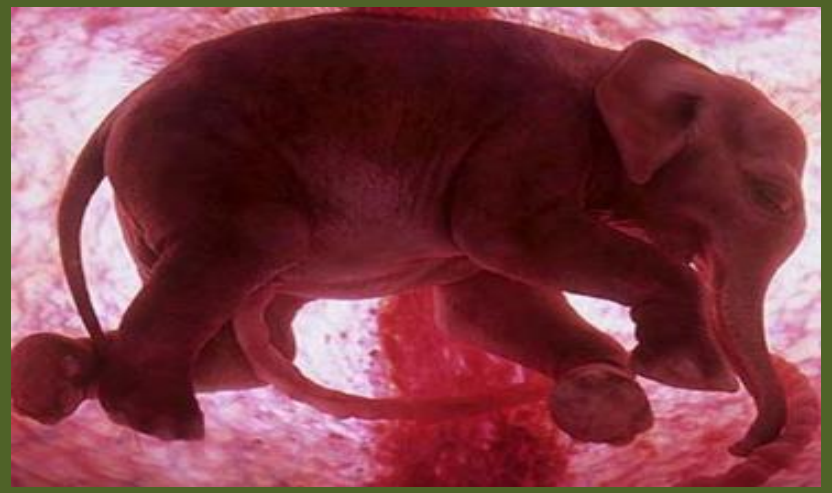
Viviparity
Development of the embryo inside the body of the parent.



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Ovoviviparity

The mode of reproduction in which embryos develop inside eggs that are retained within the mother’s body Until they are ready to hatch, e.g sharks and snakes.

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Amniotic Egg – What is it?

Amniotic eggs enable animals to reproduce on dry land. These eggs have an **amniotic membrane**, hard **shell** to protect the developing embryo. The **shell** also prevents dehydration and allows gases exchange, O_2 and CO_2.

The **albumin** (egg white) provides the embryo with water and protein.

The **egg yolk** (yellow) provides vitamins, minerals, lipids and protein to the developing embryo.

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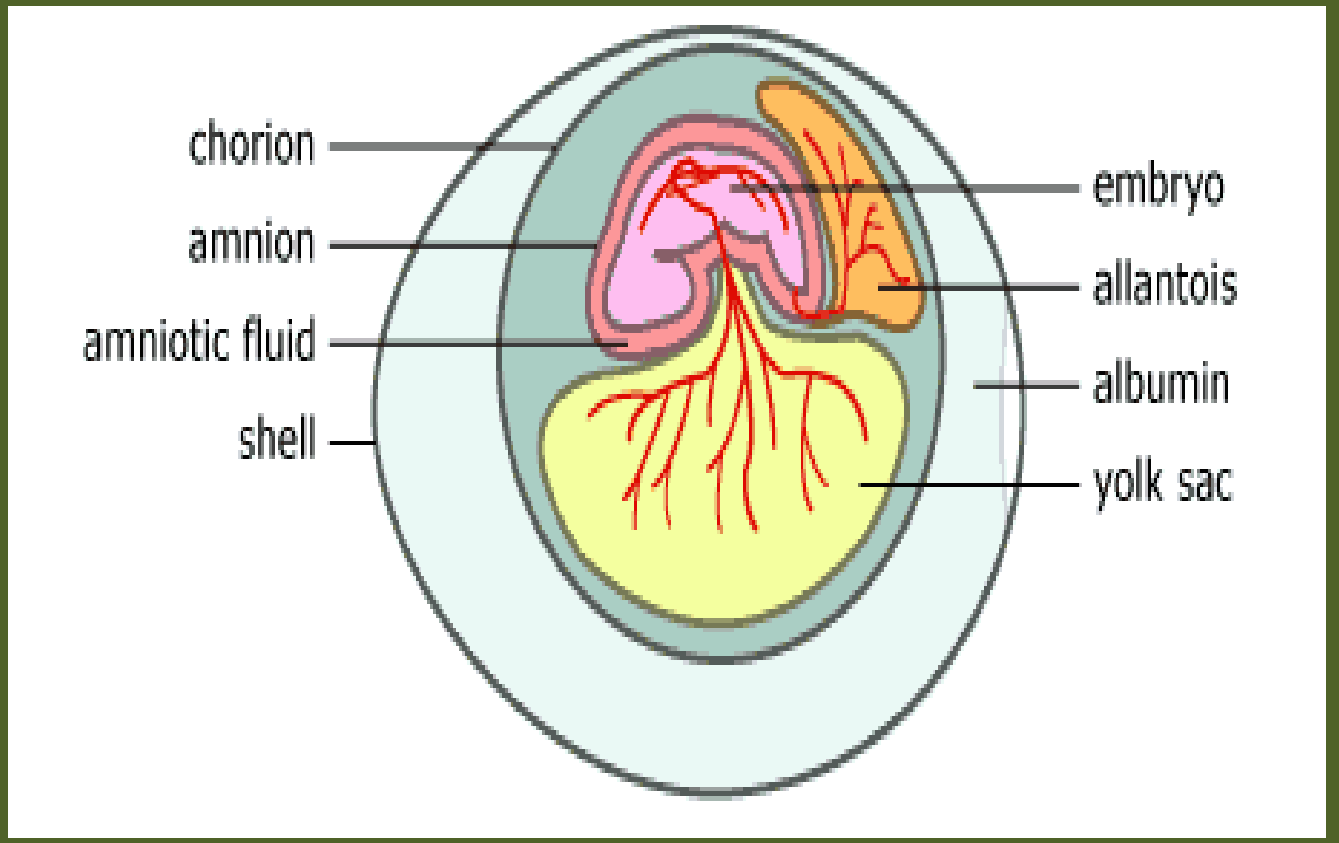
Amniotic Egg



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Key Terms – Amniotic Eggs

- **Amnion –** The innermost membrane of the fetal membranes. The sac in which the embryo is suspended. Protects the embryo from shock and dehydration.
- **Chorion** – Allows gases exchange from embryo to external environment.
- **Allantois** – Stores N-wastes.

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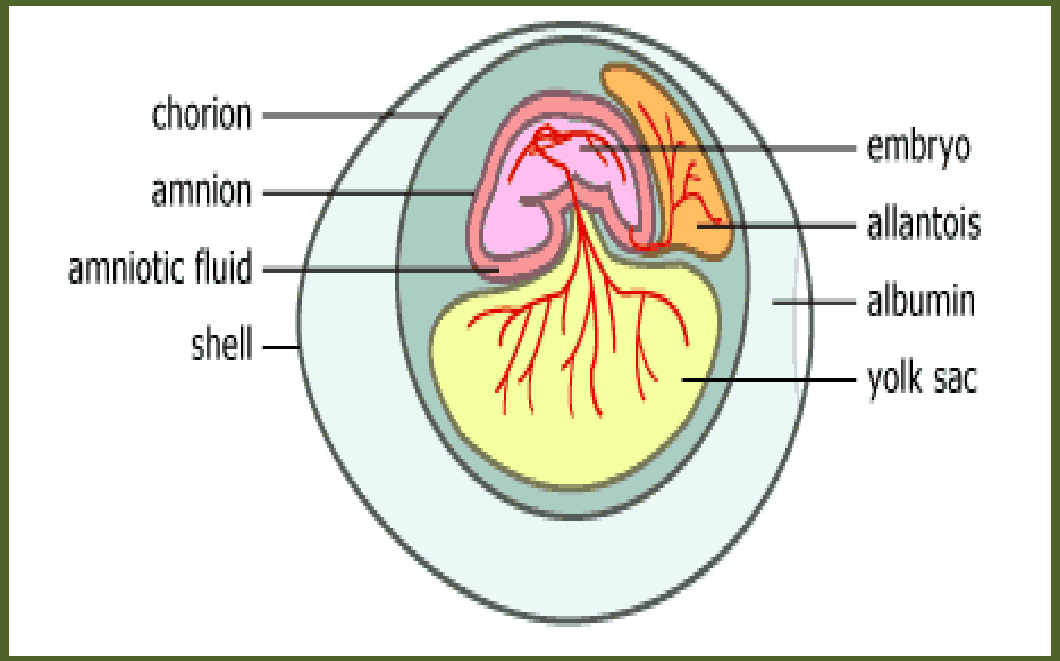
Amniotic Egg



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Precocial Development

Altricial Development

Infant Squirrels – picture from City Wildlife

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- **Precocial Development**
  Animals hatched or born in an advanced state.
  The new-born has the ability to move and feed freely.
  Hearing and sight are well developed at birth.

- **Altricial Development**
  Opposite of the above, these new-borns need extensive parental care.

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- **Parental Care**
  A contribution by parents that increases the chance of survival of the offspring. Forms of care may include preparing a suitable rearing environment, providing food and defending the young against predators. Often, animals that provide parental care, produce less offspring but there is a greater chance of survival. In mammals there are two major phases of care – gestation and the period of milk production.
  We appreciate what our parents have done for us!

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