



Sexual Reproduction in Animals

Unit Four, Lesson 4.5

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Lesson Outline

- ▶ Internal and External Fertilization
- ▶ Internal and External Development
- ▶ Sexual Reproduction Among Some Animals
 1. Tapeworms and Earthworms
 2. Frog
 3. Bird
- ▶ Sexual vs. Asexual Reproduction

Internal and External Fertilization and Development

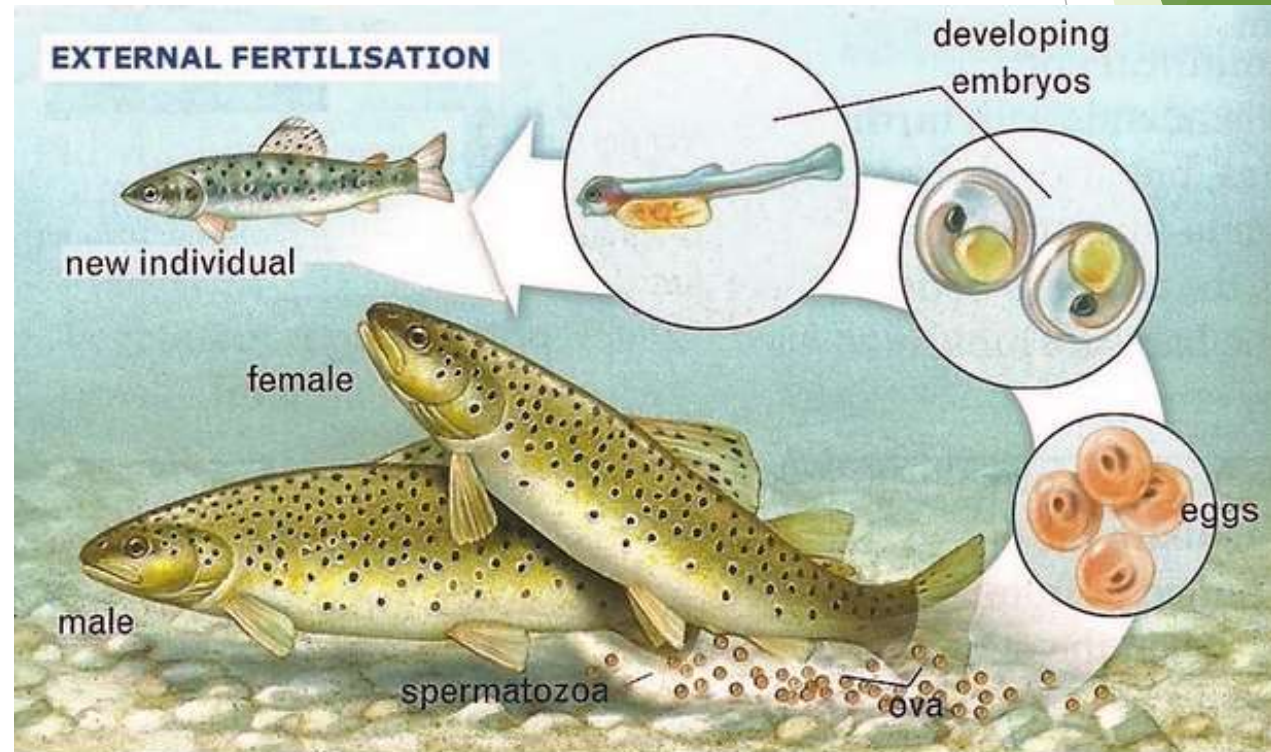
- ▶ **Internal fertilization** - fertilization inside the body
- ▶ **External fertilization** - fertilization outside the body
- ▶ **Internal development** - development inside the body
- ▶ **External development** - development outside the body

Internal and External Fertilization

- ▶ **Internal fertilization** -sperm is introduced inside the female body through sexual intercourse or **copulation** (eg. humans, mammals, birds)

Internal and External Fertilization

- ▶ **External fertilization** - female lays egg outside the body and male fertilizes it (eg. fishes, amphibians)



First, the female releases the unfertilised eggs (ova) into water and then the male releases sperm (full of spermatozoa) over them.

Internal and External Fertilization

- ▶ **Internal development - development or growth of fetus inside the mother**



(a) 5 weeks. Limb buds, eyes, the heart, the liver, and rudiments of all other organs have started to develop in the embryo, which is only about 1 cm long.



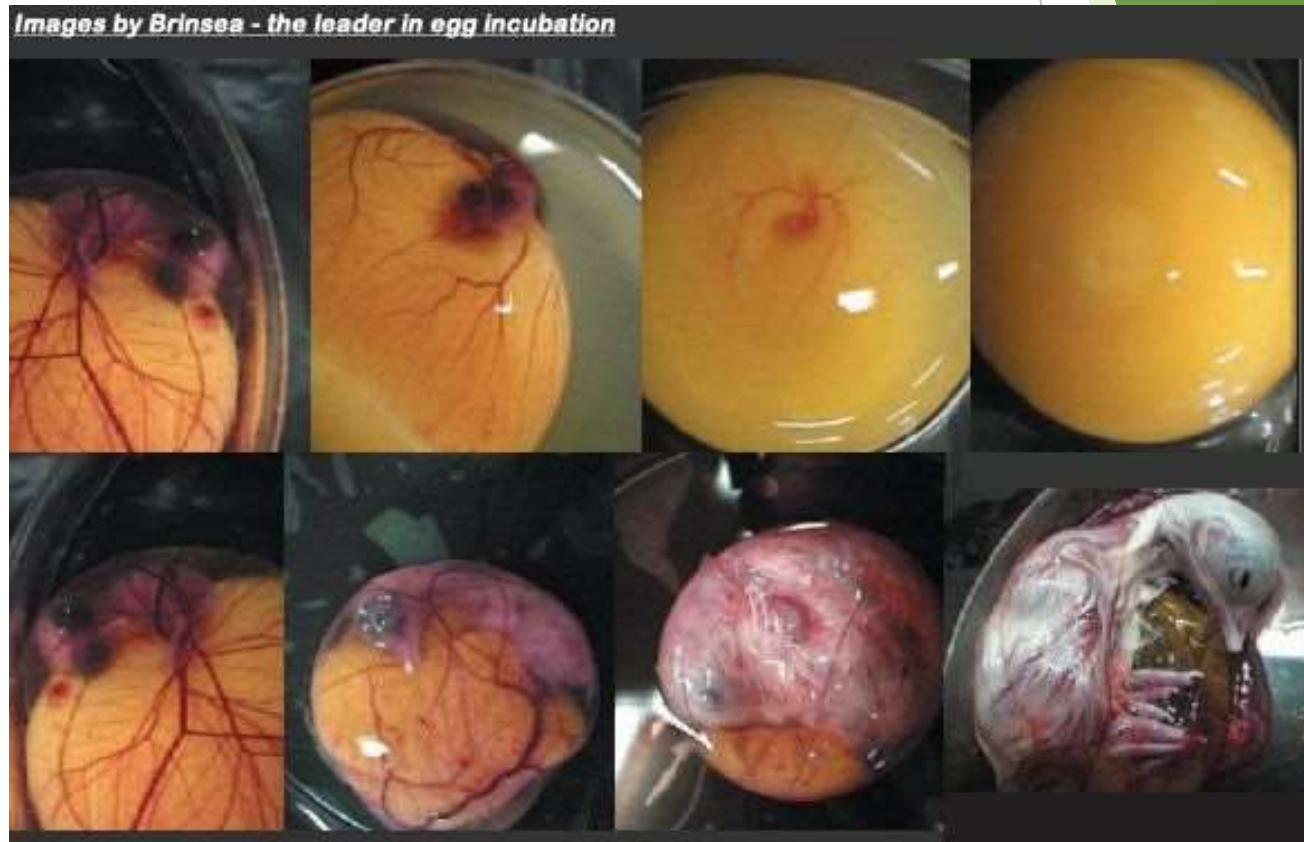
(b) 14 weeks. Growth and development of the offspring, now called a fetus, continue during the second trimester. This fetus is about 6 cm long.



(c) 20 weeks. By the end of the second trimester (at 24 weeks), the fetus grows to about 30 cm in length.

Internal and External Fertilization

- ▶ **External development** - development or growth of fetus outside the mother through an **egg**



Fertilization and Development Among Animals

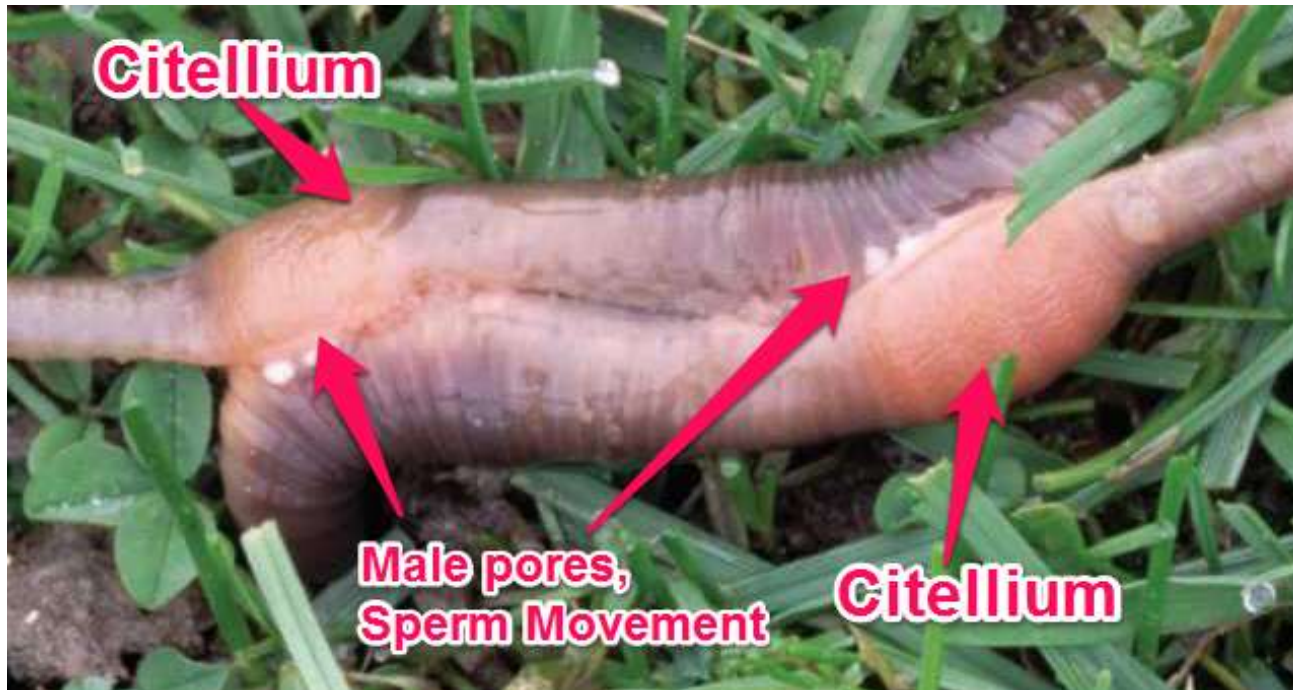
- ▶ Internal fertilization and internal development (ex. humans, pig)
- ▶ Internal fertilization and external development (ex. chicken)
- ▶ External fertilization and external development (ex. frogs, fishes)

1. Tapeworms and Earthworms

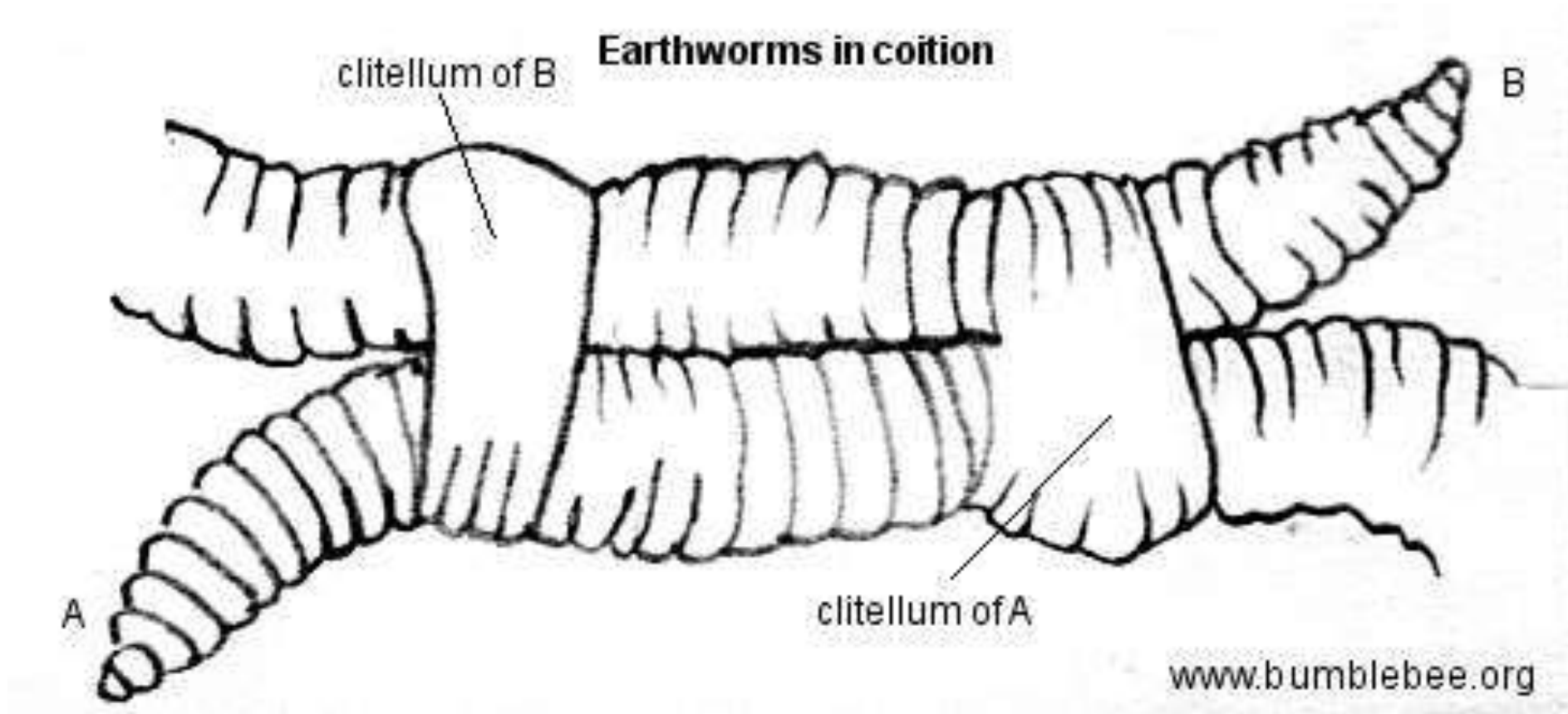
- ▶ They are **hermaphroditic** (contains both male and female sex organs)
- ▶ Tapeworm vs. Earthworms
 1. Tapeworm can **self-fertilize** itself.
 2. Even though earthworms have the male and female sex organs, they cannot self-fertilize and needs a partner (**cross-fertilization**)

1. Tapeworms and Earthworms

- ▶ Two earthworms copulate and discharges sperm cells to each other's female part.



Clitellum is the female organ



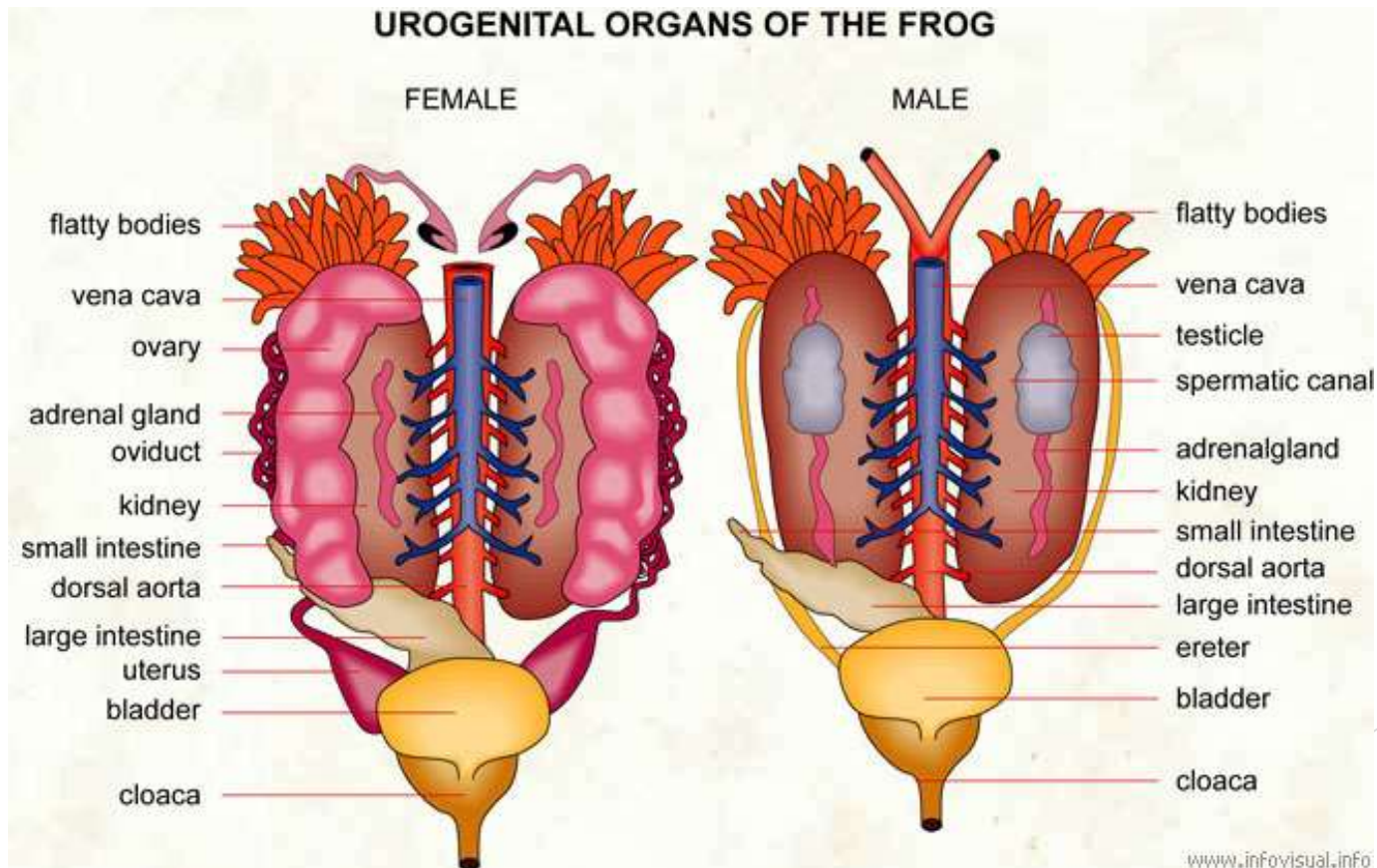
1. Tapeworms and Earthworms

- ▶ Fertilization occurs and a **cocoon** is laid. It will hatch after 3 months.



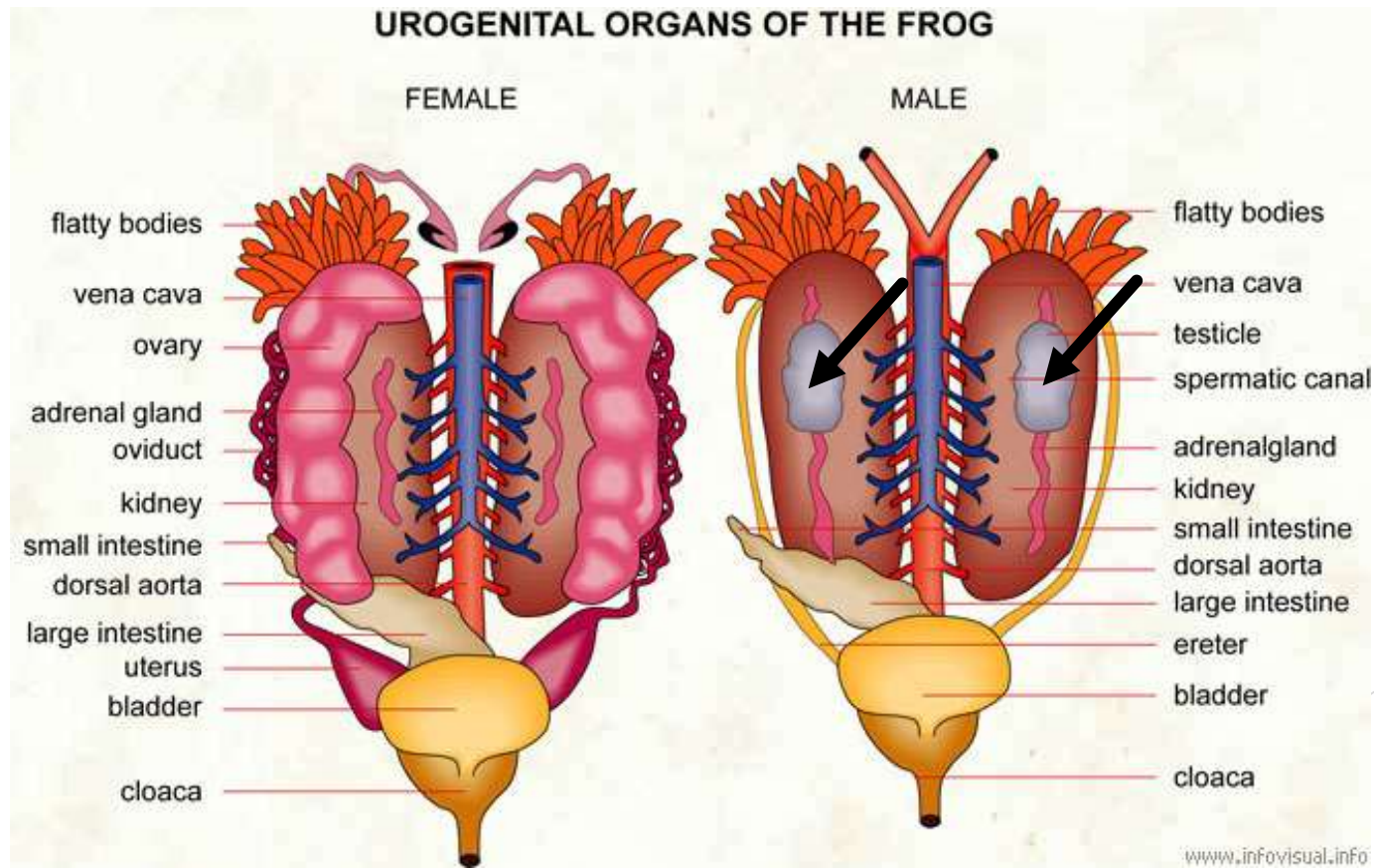
2. Frogs

- Note that their reproductive organs are closely associated with the urinary system



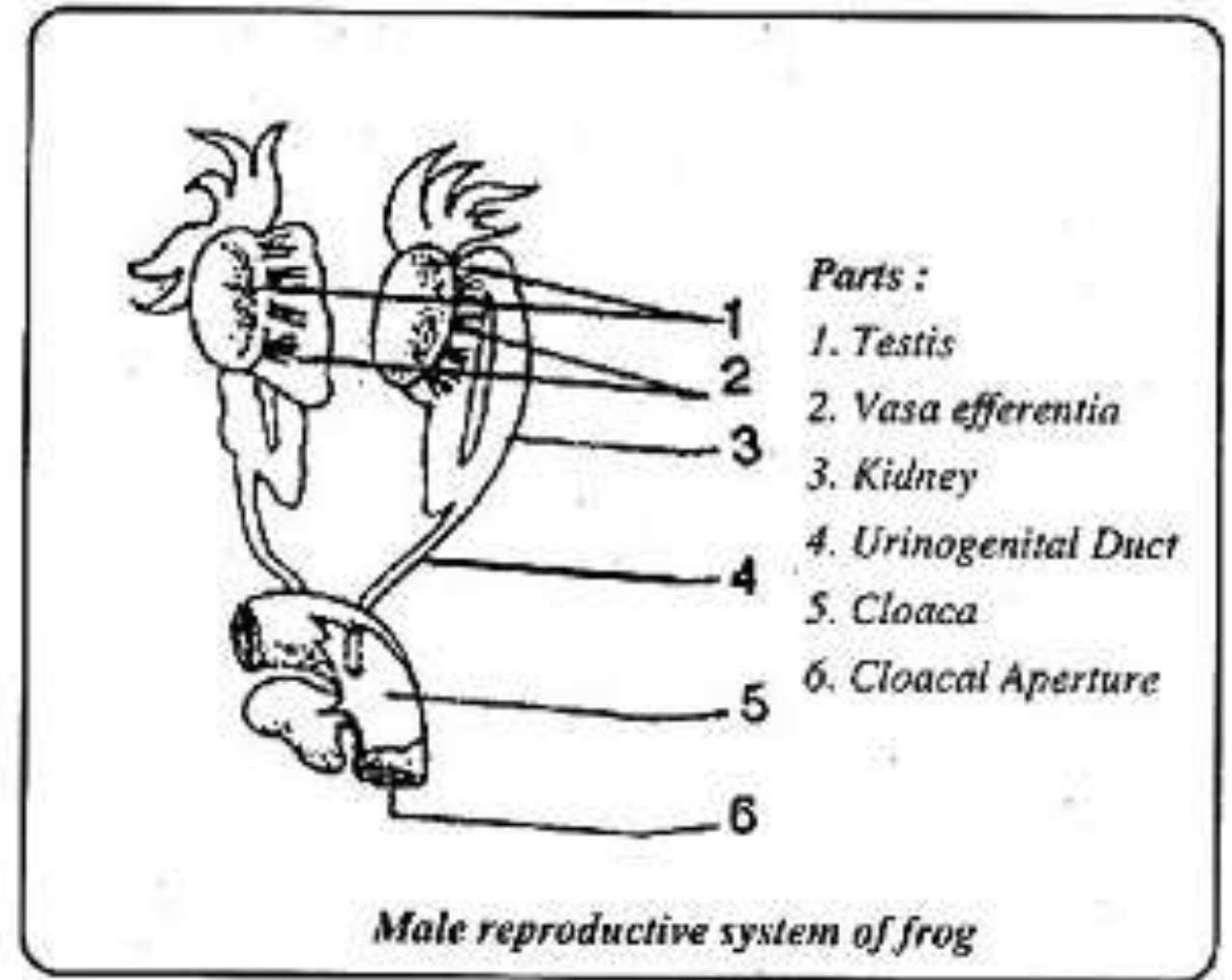
2. Frogs

- ▶ The testes of a frog are located at the ventral side (front) of the kidney. Here, sperms develop.



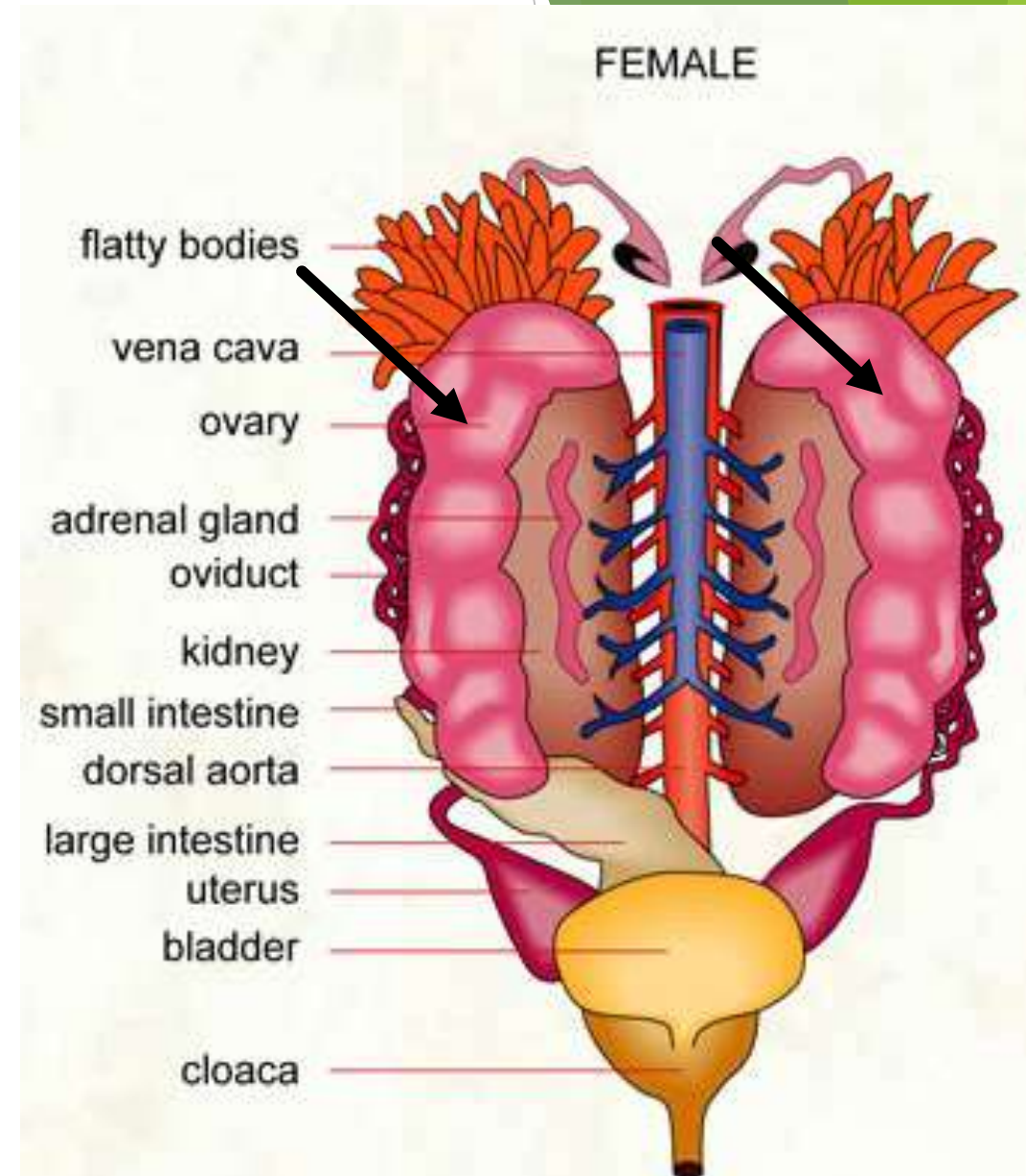
2. Frogs

- ▶ Sperms are released through small tubes into the kidney. Sperm cells go out from the kidney w/ urine through the ureter to the enlarged terminal portion of the digestive tube (cloaca), then out of the body.



2. Frogs

- ▶ The ovaries are situated near the kidneys. The eggs are delivered into the long, tube structure called **oviduct**. There, eggs are coated with jellylike substances. The egg goes out via the cloaca.



2. Frogs

- ▶ During mating season, the male produces **croaking** sound to attract females. When female arrives, the male sits on the back of the female. Such position is called **copulatory embrace** or **amplexus**. In this position, they release their gametes (egg and sperm) into the water.



2. Frogs

- ▶ Eggs are deposited outside and the male releases sperm to fertilize it. External fertilization occurs.



tungara frog
(*Physalaemus pustulosus*)
male and female

3. Birds

- ▶ Unlike the frog, fertilization occurs **inside the body** but the **development is outside**.
- ▶ The egg is fertilized inside, then later laid outside by the female.
- ▶ Eggs need warm temperature. Usually, the mother sits on them or they are placed inside an incubator. The young bird hatches in about 3 weeks (21 days)



3. Birds

- ▶ The egg's shell is tough, made up of **calcium carbonate** (CaCO_3)
- ▶ It consists of the yolk, albumen (egg white) and shell.



We will not study human reproduction. You will study that in the next grade level.

Sexual vs. Asexual Reproduction

Characteristic	Type of Reproduction	
	Asexual	Sexual
Number of Parents	1	2
% of genes from each parent	100%	50%
Pros	-do not need to find a mate (takes energy and time)	-genetic diversity (less chance of getting harmful traits from parents)
Cons	-no genetic diversity (any harmful traits that the parent has will be passed on to offspring)	-must find a mate

Activity: $\frac{1}{2}$ crosswise

Answer “Check Your Understanding” p. 143

Assignment: Notebook

Answer “Check Your Knowledge B”,
#s 1-5, p. 143

Sources:

- Science Links 7