Practical:

Anatomy of Poultry Reproductive System

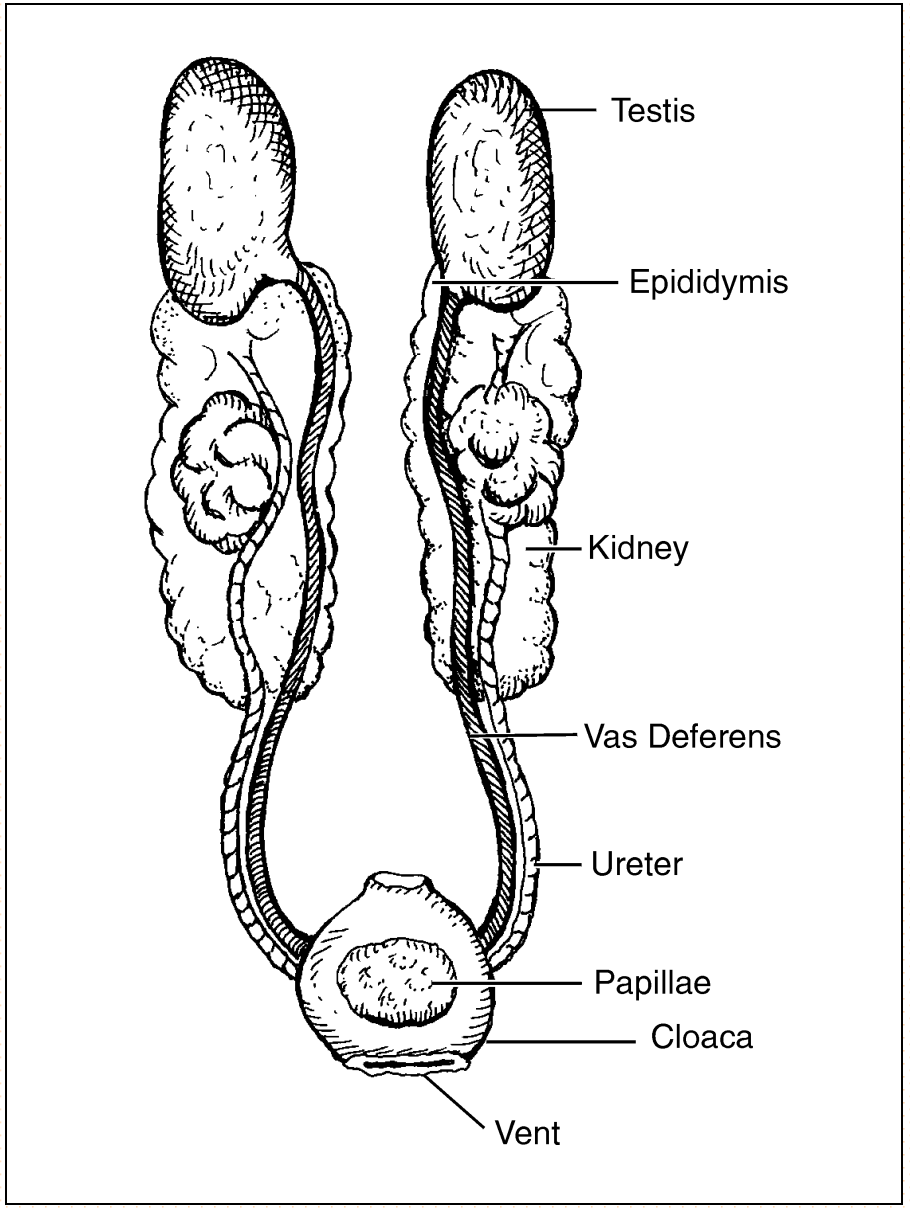
Animal Breeding

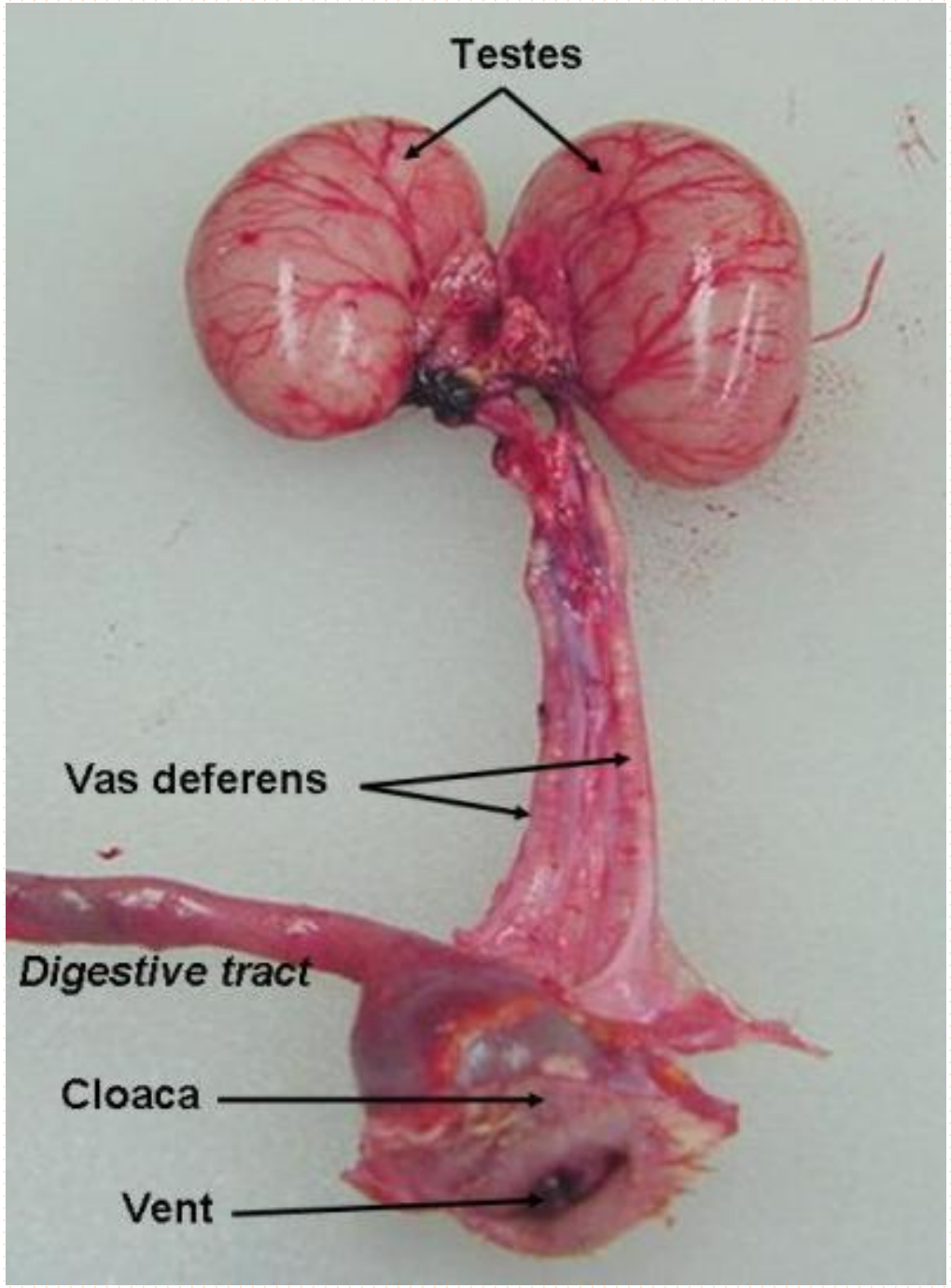
AAT 31022

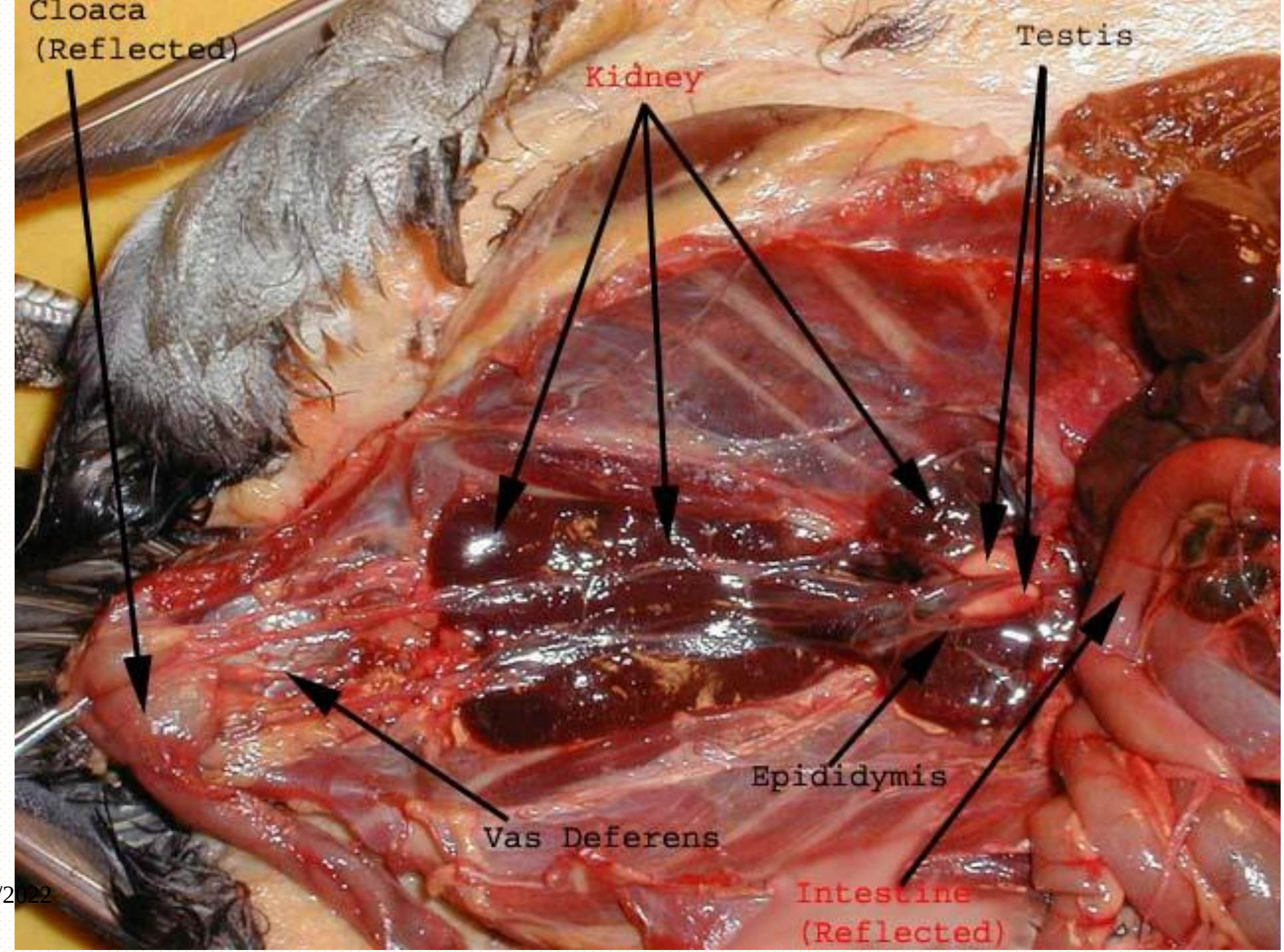
MALE REPRODUCTIVE SYSTEM IN POULTRY

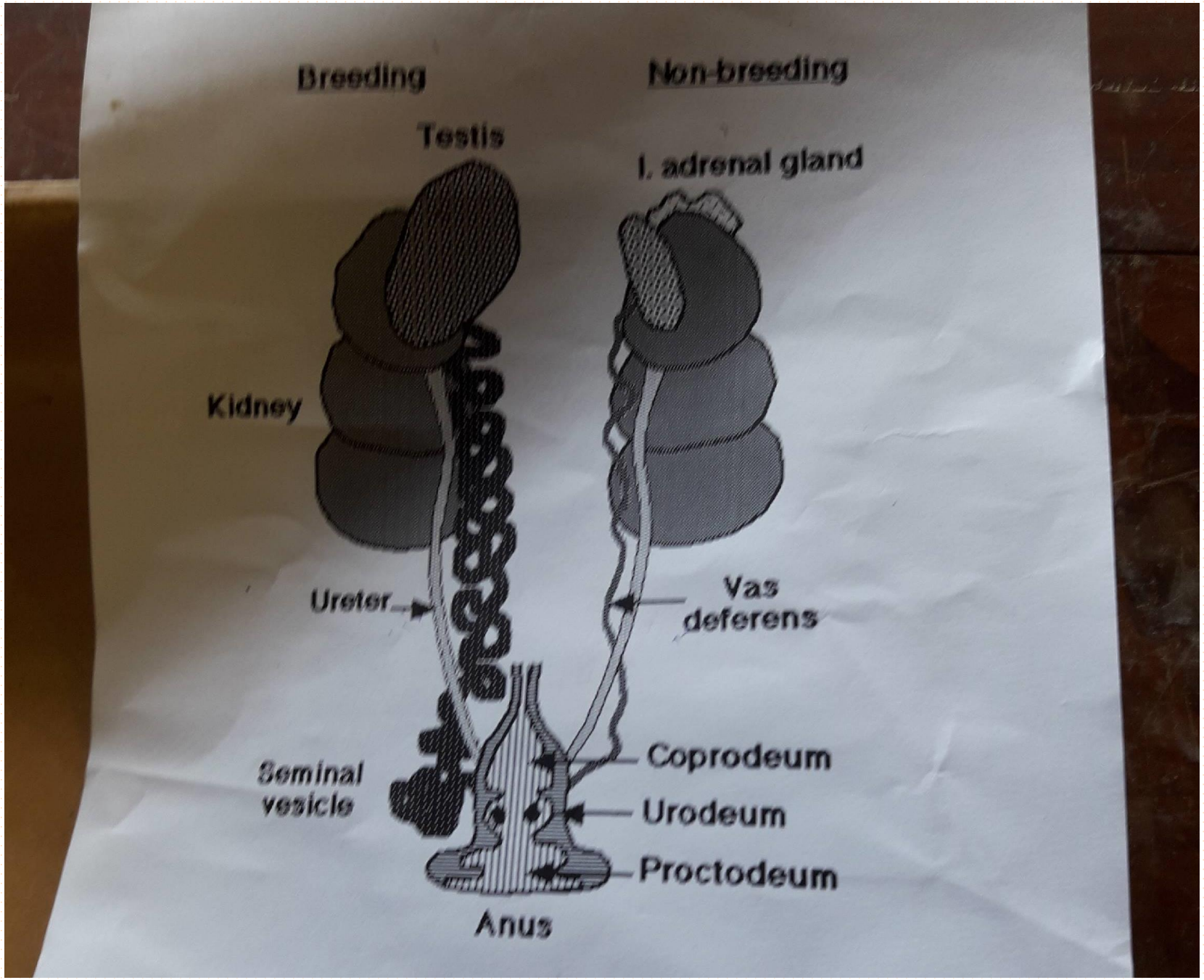
The functional parts of the male poultry reproductive tract includes testis, epididymis, vas deference, cloaca, papillae and phallus.

MALE POULTRY REPRODUCTIVE TRACT




Testes
Vas deferens
Digestive tract
Cloaca
Vent


Cloaca
(Reflected)
Kidney
Testis
Epididymis
Vas Deferens
Intestine
(Reflected)


Breeding
Non-breeding
Testis
I. adrenal gland
Kidney
Ureter
Vas deferens
Seminal vesicle
Coprodeum
Urodeum
Proctodeum
Anus

Unlike other livestock species, the ***testes*** of poultry are located within the abdominal cavity along the backbone.

The ***epididymis***, which still functions in sperm storage, is relatively small in relation to the testes.

The ***vas deferens*** extend from the epididymis to the cloaca and are located on each side of the vertebral column.

The vas deferens function in transportation of sperm and as sperm reservoirs

Cloaca – the lower end of the avian digestive tract that provides a passageway for products of the urinary, digestive, and reproductive tracts.

Papillae – located at the end of the vas deferens and on the floor of the cloaca, the papillae emit semen into the cloaca of the female.

Phallus – a copulatorỳ organ that becomes engorged with lymph during mating, which allows semen to be deposited onto the female's everted cloacus; the phallus is more developed in ducks and geese.

Androgen – the male sex hormone produced by the testes.

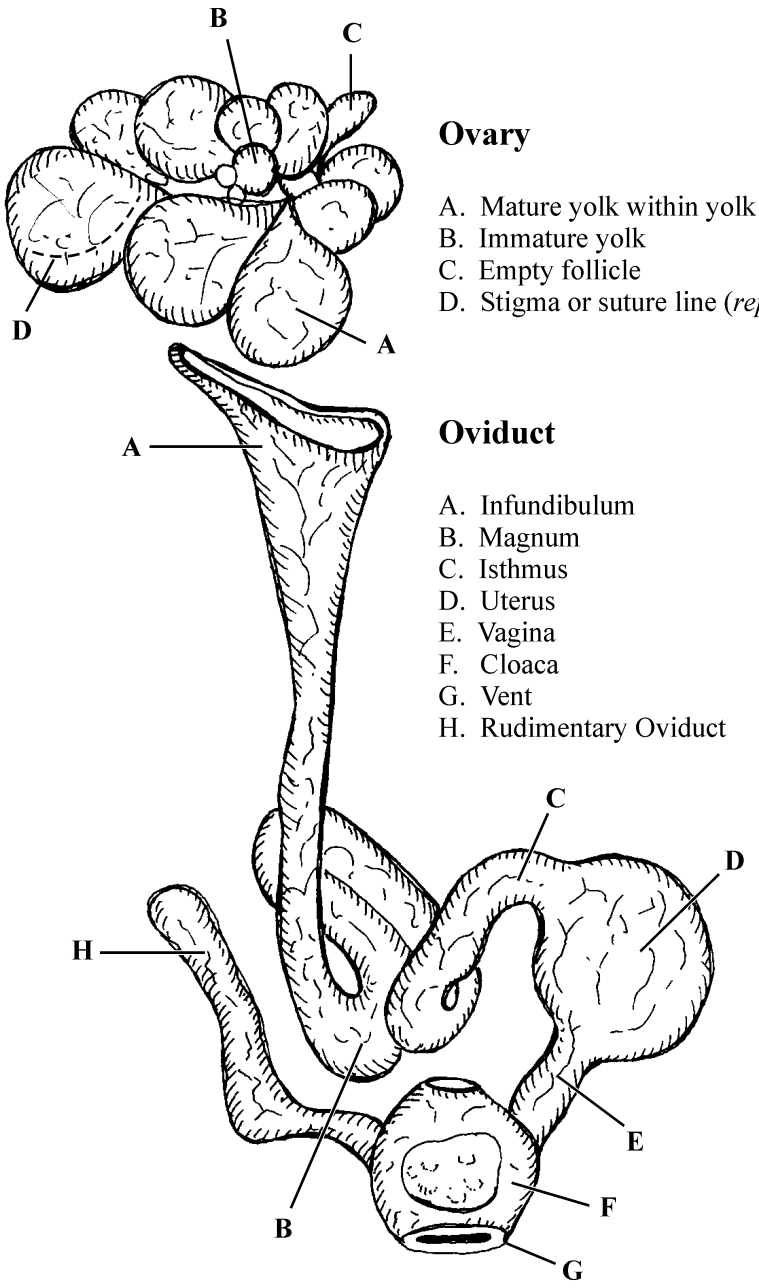
Functions of androgen include:

- Directing sexual activity and the production of sperm
- Controlling secondary sexual characteristics of the male

FEMALE REPRODUCTIVE SYSTEM IN POULTRY

The functional parts of the female poultry reproductive tract includes one ovary, an oviduct, and the cloaca.

FEMALE POULTRY REPRODUCTIVE TRACT



Ovary

A. Mature yolk within yolk sac or follicle
B. Immature yolk
C. Empty follicle
D. Stigma or suture line (*represented by broken line*)

Oviduct

A. Infundibulum
B. Magnum
C. Isthmus
D. Uterus
E. Vagina
F. Cloaca
G. Vent
H. Rudimentary Oviduct

Mature female poultry have;

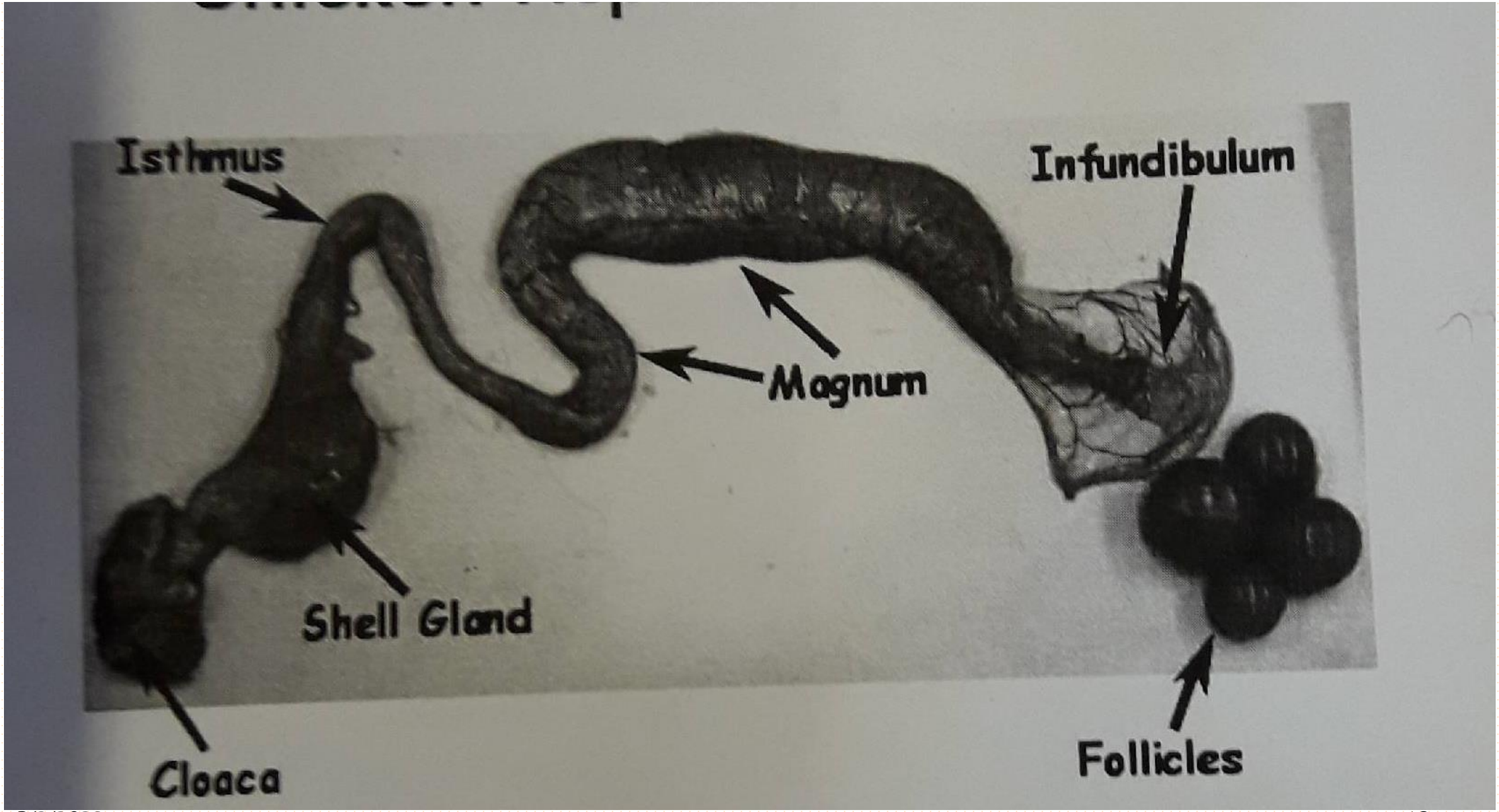
Only one functional ovary (right),

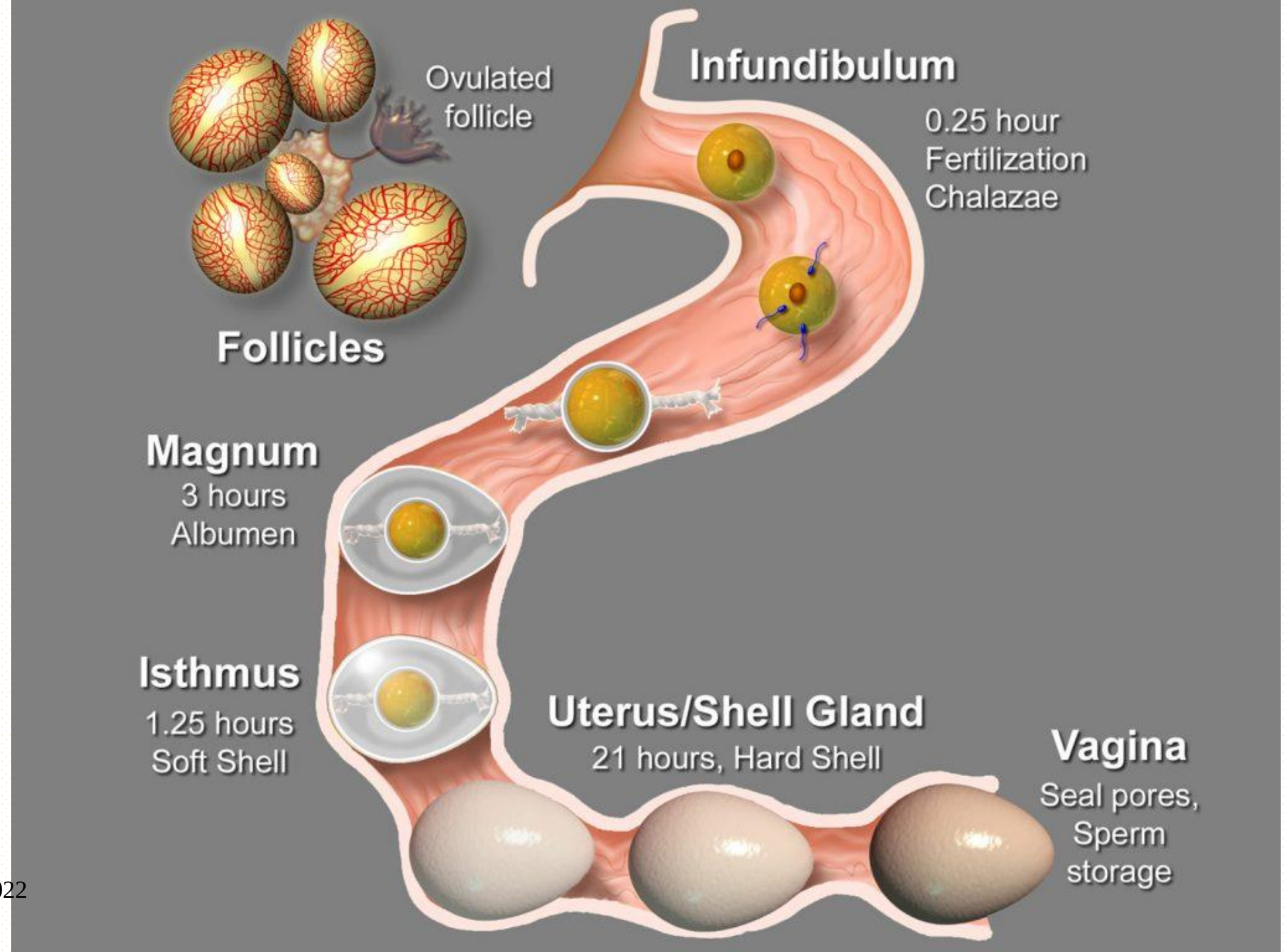
Oviduct degenerate and cease functioning before the bird reaches sexual maturity.

The ovary appears as a cluster of tiny, gray balls that are the oocytes.

At maturity, the ovary contains up to 4,000 tiny oocytes from which ovum may develop over time.

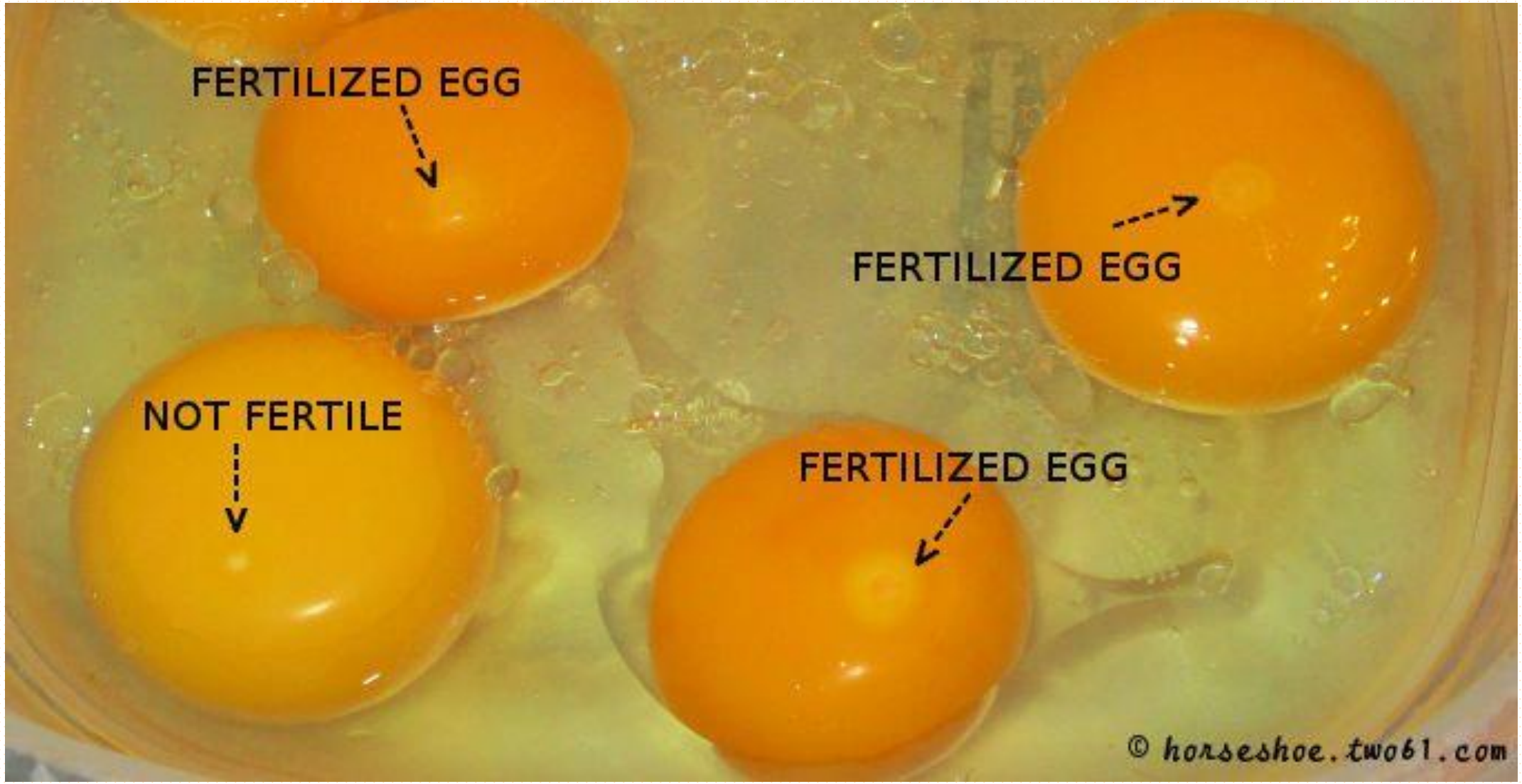
An ovum develops by collecting lipid particles from the blood to form the yolk.


Isthmus
Infundibulum
Magnum
Shell Gland
Cloaca
Follicles


Ovulated follicle
Infundibulum
0.25 hour
Fertilization
Chalazae
Follicles
Magnum
3 hours
Albumen
Isthmus
1.25 hours
Soft Shell
Uterus/Shell Gland
21 hours, Hard Shell
Vagina
Seal pores,
Sperm
storage

The yolk contains fat for energy and some protein and other nutrients needed by the developing embryo,

A small white dot called the blastodisc that contains the genetic information supplied by the female.


FERTILIZED EGG
FERTILIZED EGG
NOT FERTILE
FERTILIZED EGG
© horseshoe.two61.com

When mature, the yolk is released by the follicle and engulfed by the infundibulum.

The oviduct is about 25 inches long and consists of five parts: the infundibulum, the magnum, the isthmus, the uterus, and the vagina.

Infundibulum – funnel-like part of the oviduct that receives the yolk and is the site of fertilization.

Magnum – second part of the oviduct that secretes the thick white or albumen.

Isthmus – third part of the oviduct that adds the two shell membranes.

Uterus – the fourth part of the oviduct that secretes the thin white, the shell, and the shell pigment.

Vagina – the last part of the oviduct that holds the egg until it is laid.

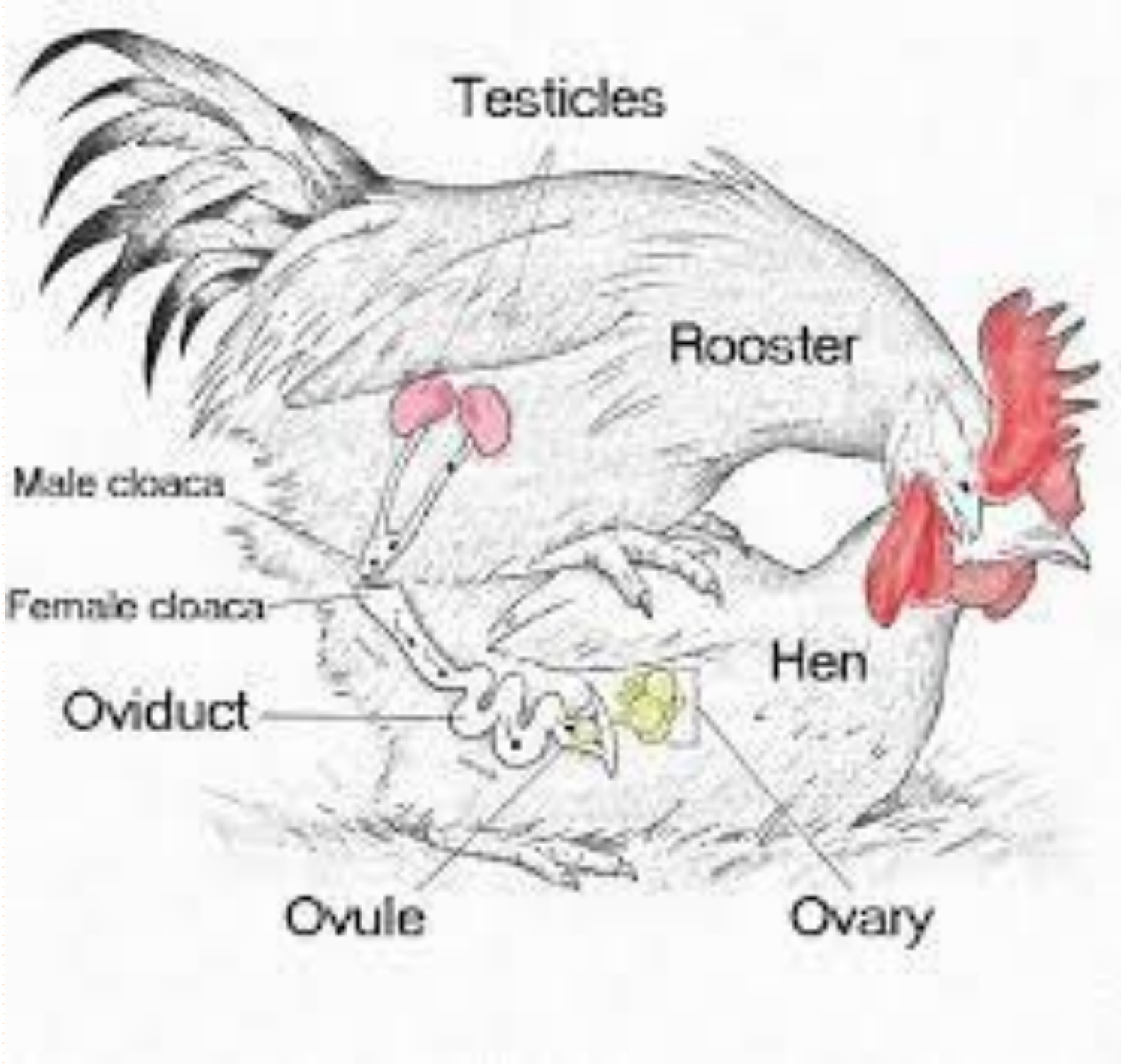
From the oviduct, the egg passes to the cloaca and then out of the body through the vent at the time of laying.

In addition to producing ova, the ovary produces the female sex hormone, estrogen, and the hormone androgen.

The androgen hormone stimulates comb growth and works with other hormones in egg production.

THE REPRODUCTIVE PROCESS IN POULTRY

In poultry, the sperm are introduced into the oviduct from the cloaca and move up the oviduct to the infundibulum, where fertilization takes place.


Testicles
Rooster
Male cloaca
Female cloaca
Hen
Oviduct
Ovule
Ovary

Eggs that are already forming when mating takes place are not fertilized.

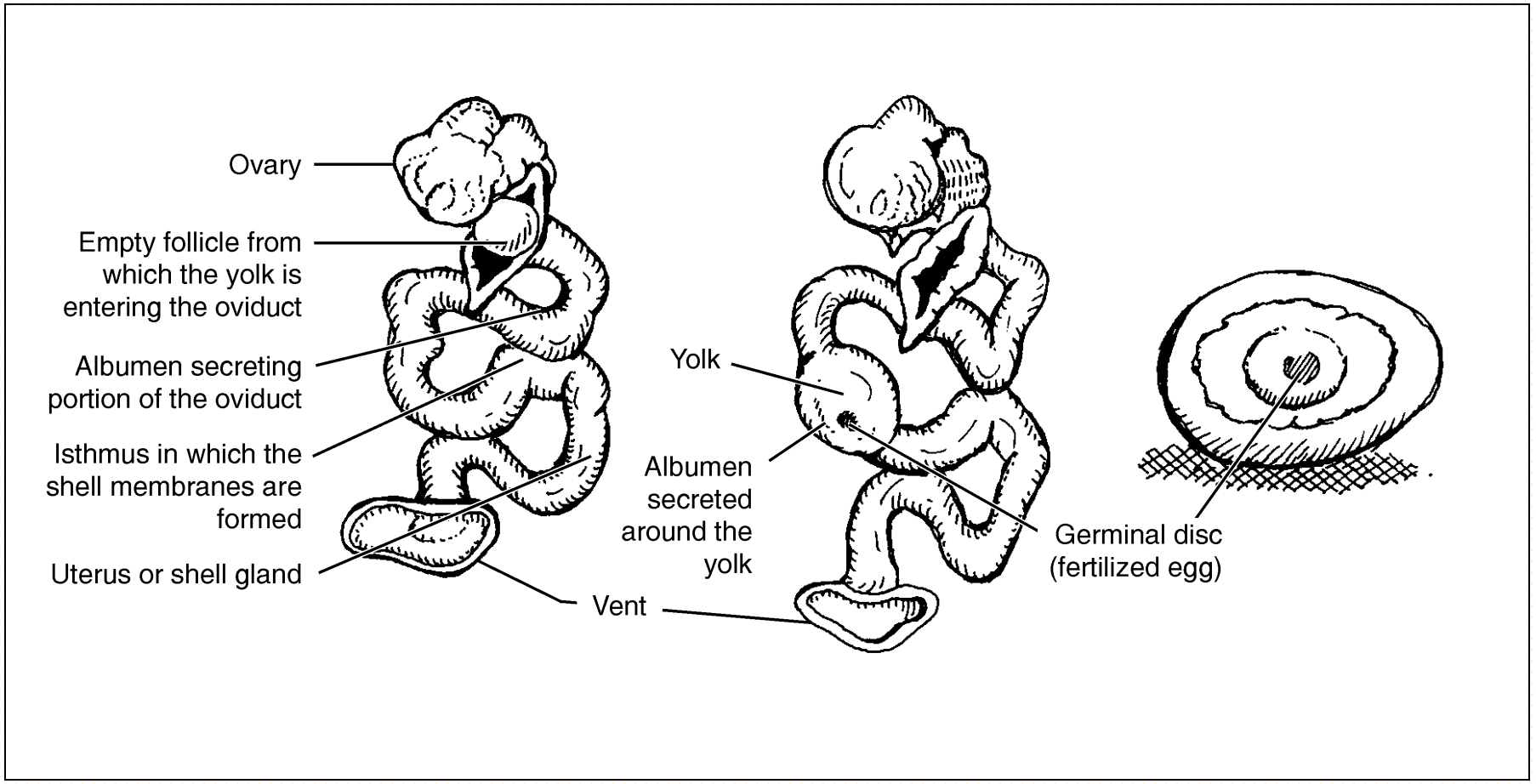
This means that the first few eggs laid after mating may not be fertile.

Sperm cells can remain viable in the oviduct for two or three weeks, though viability decreases as time passes.

The yolk is released from the hen's ovary and falls into the infundibulum, where the female germ cell on the outer edge of the yolk is fertilized by the sperm.

The fertilized yolk, or embryo, moves through the reproductive tract, acquiring the normal egg components (albumen, shell membrane, thin white, and shell).

Fertilization and Formation of an Egg in Poultry



After the egg is laid, the embryo continues to develop with the proper temperature and humidity.

The contents of the egg provide nourishment for the embryo during incubation and for three to four days after the chick has hatched.

Report Submission

- You have to write a repot, Including below content;
  - Label the male and female reproductive system of Chicken
  - Describe the functions of the each organs in your words
  - Write a short notes (about 300 words for each)
    - Eggs formations
    - Brief summary of Artificial Insemination (AI) in Poultry (Chicken)
  - Make your report as a soft copy
  - Submit via Turnitin Account and VLE
  - Plagiarisms will be check Strictly
  - Due Date: On or before 03rd of March - 2022

THANK YOU