# Egg Formation

**Egg structure includes yolk, albumen, shell membranes egg shell. Egg formation starts in the ovary which is 40 to 50g, and is completed in the different parts of oviduct. These parts are infundibulum or funnel, magnum, isthmus, uterus and vagina.**

Yolk: **It is formed in the ovary. The size of ovary is 40 to 50g. Mature ovum from the ovary is called yolk. Over 2500 to 3000 visible ova have been counted in the ovary of a laying hen. But the microscopic number may be 12,000 or more. Only 40 to 350 ocytes develop to the stage of ovulation.**

Albumen: **After ovulation the yolk drops into the funnel of the oviduct. The *magnum* region of the oviduct secretes the white albumen which around the yolk.**

Shell membrane: **The yolk with albumen then passes the magnum and enters to the *isthmus* of the oviduct which secretes the materials to form outer membrane (0.05mm thick) and inner membrane (0.015 thick). The membranes are made up of many interlacing fibers which are permeable to both water and air.**

Egg Shell: **Egg shell (about 2 grams) is added in the *uterus*. The uterus secretes calcium and carbonate ions which help to form the calcium carbonate, the egg shell. Egg stays here just prior to laying. Dryness of egg shell takes place here.**

**Egg laying: Eggs are normally formed with the small end first as they move down the oviduct. But just prior to laying (1 to 2 minutes ago) the egg is rotated or turned horizontally through 180 degrees and lays egg with large end first. But in some abnormal situations small end first may be found.**

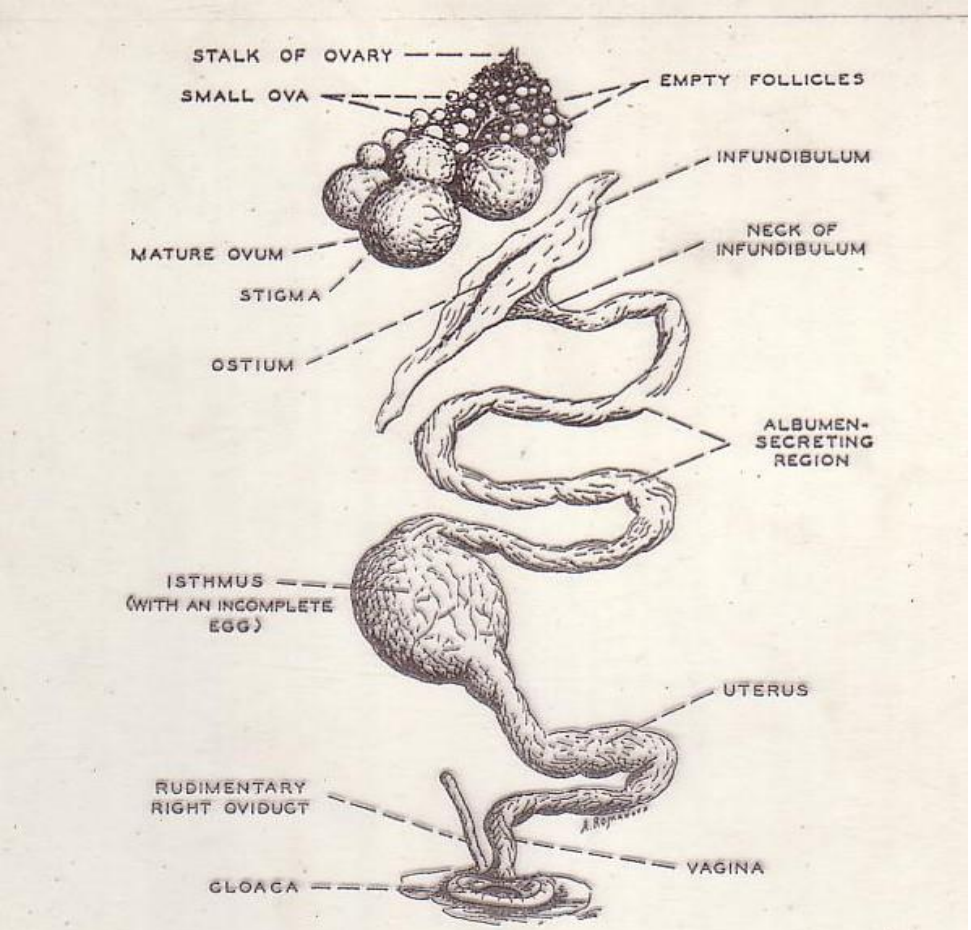


Fig. 2–18. Ovary and oviduct of a chicken. (Courtesy of A.L. Romanoff and John Wiley & Sons, Inc., New York.)

## Reproductive System (Ovary+ Oviduct)

## Egg Formation in the Oviduct

| Parts of oviduct | Length (cm) | Time | Function |
|---|---|---|---|
| Infundibulum or Funnel | **9** | **15 min.** | **It receives the mature ruptured yolk from the ovary. Fertilization occurs here if sperm is available.** |
| Magnum | **33** | **3 hrs.** | **Secretes albumen which is deposited here around the yolk.** |
| Isthmus | **10** | **1.25 hrs.** | **Shell membranes are added here.** |
| Uterus | **11** | **21 hrs.** | **Egg shell and its pigmentation are added here over the shell membrane. Egg stay here just prior to laying.** |
| Vagina | **12** | **30 min.** | **Expulsion of egg: Egg laying** |

Note: Egg Formation Time: 24 hrs. +

**Related Hormones:**

1. Anterior pituitary gland-FSH (Follicle Stimulating Hormone-development of ovarian follicles)
2. Ovary- Estrogen (development of oviduct; increase blood calcium and other nutrients necessary for egg formation; spread of pubic bone and vent enlargement)
3. Ovary-Progesterone (release of LH)
4. Anterior pituitary gland- LH (Luteinizing Hormone causes release of mature yolk from the ovary and proper functioning of oviduct)
5. Ovary- male hormone, androgen (Red waxy comb & wattle and affects secretion of albumen in the magnum)
6. Posterior pituitary gland- Oxytocin (Release of yolk and egg laying)