

Being a Laying Hen isn't Always Easy!

Follow along with pictures on next page.

What Happens in a Chickens Ovary?

The nutrients needed to make yolk for the egg come from the hen's diet. Nutrients from food the hen eats are absorbed from her digestive tract into her bloodstream. The hen's liver takes these nutrients from the bloodstream and turns them into yolk. Yolk is then carried by the bloodstream from the liver to the ovary. In the ovary the follicular cells surrounding the oocyte take the yolk and other nutrients from the bloodstream and pass them along to the oocyte.

The immature oocytes and their surrounding follicular cells lie deeply embedded within the ovary. As the oocyte accumulates more and more yolk, it becomes too big to fit inside the ovary. Consequently, the oocyte and the ovarian follicle it is nested in is continually pushed toward the outer edge of the ovary, until it is connected to the ovary by only a stalk. When the oocyte has accumulated enough yolk to grow a chick, the oocyte ruptures from its follicle. This process is called ovulation.

The free oocyte is guided by the infundibulum into the mouth of the hen's left oviduct.
(In the female chicken only the left ovary and oviduct develop.)

What happens in the Oviduct?

Shortly after release from the ovary, the egg's nucleus undergoes changes to prepare it for fertilization. Only one of the cells produced during change goes on to become a mature oocyte, while the rest fade away. The mature oocyte now contains a few chromosomes and is ready to be fertilized by a sperm. *Inside the lower portion of the oviduct are special crypts where sperm from a rooster can be stored and remain viable for up to three weeks.* Ovulation causes the walls of the oviduct to contract and cilia lining the walls to move, causing an upward current in the oviduct. If sperm are present in the crypts of the lower oviduct, they will be swept toward the mature oocyte as it enters the oviduct and fertilization takes place.

Whether the oocyte is fertilized or not, it will continue down the oviduct to be covered by layers of albumen (egg white) and internal supporting structures. The portion of the oviduct that secrets albumen is called the magnus. The oocyte and its surrounding layers can now be called an egg. In its upper portion the oviduct adds an outer vitelline membrane to the egg. Because the inside walls of the oviduct are arranged in downward spiraling folds, the egg rotates as it travels down the oviduct. As the egg twists, protein fibers extending from the new vitelline membrane capture the thick and thin albumens secreted along the oviduct. This is how the chalazae and layers of albumen are formed.

The shell membranes are added next. The shell gland, located toward the end of the oviduct in the uterus, adds the shell. It takes about 24 hours for the egg to travel down the oviduct. Hens tend to lay eggs during the middle of the day; if the egg is not complete until later in the day, it will remain at the end of the oviduct until the next day.

SIMPLIFIED: The oviduct is a large tube, whitish in color, which starts from a point just below the ovary and ends at the cloaca. *During the breeding season it becomes much enlarged, and is covered with a network of fine blood vessels.* The upper opening of the oviduct is expanded in the shape of a funnel to facilitate the entrance of the ovum when it emerges from the yolk sac. The duct on it's way to the cloaca lies in folds, being lapped upon itself three times before it finally passes into the cloaca.

THE OVIDUCT OF A CHICKEN

