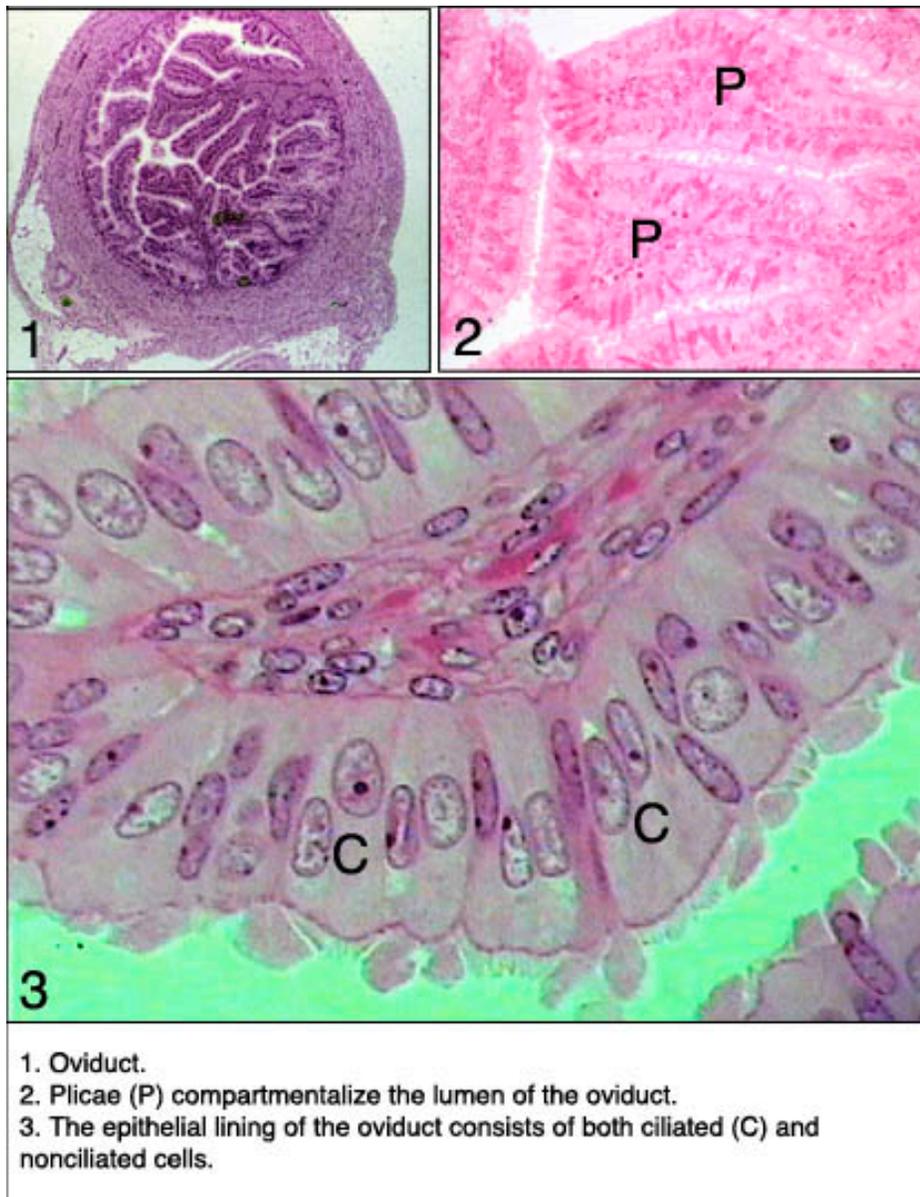


Oviduct



The oviducts (uterine tubes) are a pair of muscular tubes that extend from the ovary to the uterus along the upper margin of the broad ligament. One end of the tube is closely related to the ovary and, at this end, is open to the peritoneal cavity. The other end communicates with the lumen of the uterus. The oviduct delivers the ovum, released at ovulation, to the uterine cavity and provides an environment for fertilization and initial segmentation of the fertilized ovum. The oviduct is divided into several segments. The ovarian end, the infundibulum, is funnel-shaped, and its margin is drawn out in numerous tapering processes called fimbria. The infundibulum opens into the tortuous, thin-walled ampulla of the tube, which makes up slightly more than half the length of the oviduct. The ampulla is continuous with the isthmus, a narrower, cordlike portion that makes up about the medial one-third. The intramural (interstitial) part is the continuation of the tube where it passes through the uterine wall. As in other hollow viscera, the wall of the oviduct consists of several layers: an external serosa, an intermediate muscularis, and an internal mucosa.

Mucosa

The mucosa of the oviduct presents a series of longitudinal folds called plicae. In the ampulla the plicae have secondary and even tertiary folds to create a complex labyrinth of epithelial-lined spaces. In the isthmus the plicae are shorter with little branching, while in the intramural part the plicae form only low ridges. Throughout the tube, the plicae consist of a single layer of columnar epithelial cells resting on an incomplete basement membrane and a lamina propria of richly cellular connective tissue that contains a network of reticular fibers and fibroblasts. The epithelium decreases in height from ampulla to uterus and consists of ciliated and nonciliated cells. The ciliated cells are most numerous on the surface of the fimbria and progressively decrease in number through the ampulla, isthmus, and intramural portions. The nonciliated cells appear to be secretory and help establish an environment that is suitable for the survival and fertilization of the ovum and for maintenance of the zygote. A third cell type, an undifferentiated cell with a darkly staining nucleus, may represent a precursor of the secretory cells or an exhausted secretory cell. The epithelium shows cyclic changes associated with ovarian cycles. During the follicular phase, ciliated cells increase in height, reaching their maximum at about the time of ovulation, and there is evidence of increased activity in the secretory cells. In the luteal phase, ciliated cells decrease in height and lose their cilia, and there is augmented secretory activity by the secretory cells. Loss of cilia is greatest in the fimbria and least in the isthmus. The cilia are responsive to steroid hormones: estrogen appears to be responsible for the appearance and maintenance of cilia, and progesterone increases the rate at which they beat. Other ciliated cells located elsewhere in the body show no such hormone responsiveness.

Muscular Coat and Serosa

The mucous membrane rests directly on the muscle coat, and there is no submucosa. The muscle coat consists of two layers of smooth muscle cells, but the layers are not sharply defined. The inner layer is circular or closely spiraled; the outer layer of longitudinal muscle is the thinner. The muscularis increases in thickness toward the uterus due to the increased depth of the inner layer. Externally, the oviduct is covered by a serosa that represents the peritoneal covering of the organ. Fertilization usually occurs in the ampulla of the oviduct.