

## Chapter IX. REPRODUCTIVE SYSTEM.

A. S. Raikhel

### A. FEMALE REPRODUCTIVE SYSTEM

#### Fine structure of ducts and vagina

In ixodid ticks, the female reproductive system consists of an unpaired ovary and paired oviducts fusing into an unpaired uterus. The uterus opens into the complicated ectodermal vagina which is divided in several parts (Balashov, 1967). Ultrastructure of oviducts has been described for the ixodid Dermacentor andersoni (Brinton et al., 1974), but all parts of the female reproductive system have been investigated only for Hyalomma asiaticum (Balashov and Raikhel, 1978b).

The oviducts, a pair of slender tubes extending from the ends of the ovary, loop in several anteroposterior curves. In unfed females, the diameter of the oviducts is 25-30  $\mu\text{m}$  and 40-50  $\mu\text{m}$  distally. In transverse section, they are subcircular with a small central lumen. The oviduct wall consists of a layer of cuboidal epithelial cells with large nuclei and the cytoplasm containing free ribosomes and a few mitochondria. Oviduct cell microvilli fill the narrow lumen; the cell basal area is covered by thick basal lamina and an external undifferentiated cell layer (Figs. 330a, 331).

After bloodfeeding, oviduct cells exhibit numerous mitotic divisions and enlarge greatly. They become pyramidal, approximately 70  $\mu\text{m}$  distally, 50  $\mu\text{m}$  proximally. Their apical surface, especially distally, is irregular and covered by numerous projections with many microvilli (Fig. 333). Microvilli length doubles to 2.5  $\mu\text{m}$ . Many micropinocytotic vesicles (0.15-0.2  $\mu\text{m}$  in diameter) appear apically in the cytoplasm. The pinocytotic vesicles have been identified in D. andersoni oviduct cells (Brinton et al., 1974). They are thought to take up components of endospermatophoric seminal fluid which undergo lysosomal breakdown. The cytoplasm of oviduct cells has dense lysosomelike bodies (0.6-1  $\mu\text{m}$  in diameter), mainly located in the basal area (Fig. 334). Great development of RER and Golgi complexes reflects high synthetic activity of oviduct cells. The Golgi complexes are composed of smooth-surfaced cisternae and dense secretory bodies, 0.5-1  $\mu\text{m}$  in diameter, many of which are also present apically in the oviduct cell. Similar secretory bodies have been shown in D. andersoni oviduct cells (Brinton et al., 1974). As demonstrated, histochemically tick oviduct cells secrete a P.A.S. - positive colloidal material rich in basic proteins (Balashov, 1967).