

PRELIMINARY REPORT ON THE EARLY OOGENESIS IN EUMANTISPA  
HARMANDI (NEUROPTERA: MANTISPIDAE)

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In the present study we describe the ultrastructures of the oocyte and its accompanying nurse cells and the follicular cells during the early oogenesis in Eumantispa harmandi (Neuroptera: Mantispidae).

Each ovary in E. harmandi is composed of about 160 polytrophic ovarioles. Just after emergence, each ovariole is roughly 1,500  $\mu$ m long from the tip of the germarium to the ultimate ovarian follicle or egg chamber. The vitellarium is composed of a chain of 13-15 previtellogenic follicles or egg chambers at successive growing stages, and each of these consists of a cluster of 11-13 anterior nurse cells and a posterior oocyte, en-

closed by a single layer of follicular cells. Thus, according to the result obtained in the present study, the number of interconnected sister cells in one follicle of E. harmandi does not follow the  $2^n$  rule. The same observation holds with Chrysopa perla (Rousset, 1978a,b), Hagenomyia micans, Ascalaphus ramburi and Protidricerus japonicus (Matsuzaki, unpublished data).

The young oocyte situated in the anteriormost region of the vitellarium, begins to grow gradually. The size of the oocyte nucleus are somewhat bigger than that of the nurse cells, and the oocyte nucleus contains numerous small masses of the nucleolar material.

The oocyte and its accompanying nurse cells are connected each other with the intercellular bridges or ring canals (1.7-2.3  $\mu\text{m}$  in diameter). The cytoplasm of the ring canal region is rich in free ribosomes and microtubules, and includes several mitochondria. This observation suggests that the migration of the organelles occurs mostly in the early previtellogenesis.

In Eumantispa, the oocytes during previtellogenesis is characterized by the following features; the oocyte cytoplasm is rich in free ribosomes and contains many mitochondria and several Golgi bodies. In addition, numerous rough-surfaced endoplasmic reticulum of various sizes are randomly distributed in the cytoplasm. At the same time, there are seen in the perinuclear cytoplasm a long strand of rough-surfaced endoplasmic reticulum, suggesting their derivation from the outer nuclear envelope.

In the posterior region of the germarium, the follicular cells surrounding young egg chambers show poor development. That is, the flattened nuclei are observed sporadically. However,

their cytoplasmic organelles, such as free ribosomes, mitochondria, rough-surfaced endoplasmic reticulum etc., are not well developed. In the subsequent stages, they grow gradually in size as well as in number and become cuboidal on the oocyte and squamous on the nurse chamber. During this process, the follicular cell organelles, such as the free ribosomes, mitochondria, rough-surfaced endoplasmic reticulum, Golgi bodies, etc., also increase gradually. The microvilli are observed in the space between the follicular cells and oocyte surface, but the micropinocytosis has not been observed.

#### References

- Rousset, A. (1978a) *Int. J. Insect Morphol. Embryol.*, 7:45-57.  
----- (1978b) *Int. J. Insect Morphol. Embryol.*, 7:59-71.