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FIRST REPORT ON THE ULTRASTRUCTURE (TEM) OF A TRULY PARASITIC PHORID: THE OVARY OF THE SCUTTLE FLY *Pseudacteon solenopsidis* SCHMITZ (DIPTERA : PHORIDAE)

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The South American scuttle fly *Pseudacteon* includes more than twenty species which are host specific parasitoids of *Solenopsis* fire ants. With the exception of their biological/behavioral impact on fire ant populations and/or external morphology, mainly directioned as fire ant biological control and taxonomy, respectively, little is known about their internal morphology. The purpose of this study is to characterize the ovary ultrastructure of *P. solenopsidis* using transmission electron microscopy (TEM). Preliminary histological analysis of another species have shown that all flies randomly collected in the field had ovaries and oviducts full of eggs. Ovariole organization was clearly observed by the presence of eggs as it was not possible to discriminate their related tissues (follicular epithelium and peritoneal membrane) or tunica propria; only sparse nuclei were seen between the eggs. The lack of oocytes in previtellogenic or vitellogenic growth phases in the ovarioles led us to think that these phases occured before or during pupation. Female specimens reared in the laboratory (0-2 days old and unmated) were dissected in fixative solution (cacodylate buffer 0.1M; glutaraldehyde 2.5%; sucrose 3%). The genital tracts were routinely processed as follows: OsO4 post-fixation; uranyl acetate "in block" contrastation; alcohol dehydration; epon araldite infiltration and embedding. Ultrathin sections were obtained using a diamond knife and the sections were ultimately contrasted in a Ultrastainer-Leica processor (lead citrate). The analysis of the ultrathin sections was accomplished using a Zeiss EM900 TEM. The general morphology of the ovary is very similar to that described for *P. wasmanni*. A double musculature layer covers each ovary and a space could be observed between them; both muscular layers show muscular fibers directed at different angles to each other (**Fig. 1**). In addition to these features, ovariole musculature was characterized as sparse and narrow muscle cells which seems to be directioned antero-posteriorly in relation to the longitudinal axis of the ovary (**Fig. 3**). The follicular epithelium in the choriogenesis process is formed by flattened cells in which its cytoplasm exhibits well developed cisternae of rough endoplasmic reticulum with its lumen very enlarged and direct linked up to Golgi complexes (**Fig 1** and **2**). Prismatic cells containing eletrondense vacuoles also were noted and interpreted as phagocytes; it seems that these cells are involved in follicle cell degradation. The ovaries also showed all ovarioles containing eggs in the choriogenesis process. The egg tube or ovariole if it really exists along consecutive follicles is delimited by a very thin *tunica propria*. Follicle cell nuclei possess a large amount of heterochromatic chromatin associated with the nuclear envelope. Follicle cell degeneration/death was observed; this process was characterized by enhanced cytoplasmic eletrondensity and by the presence of lysosomal vacuoles containing cytoplasmatic debris (**Fig. 3**). The chorion is formed by a thin endochorion (not ornamented) and a exochorion that changes from a feeble/granular configuration to a condensed one, depending on the advance of the choriogenic process (**Fig 4**).

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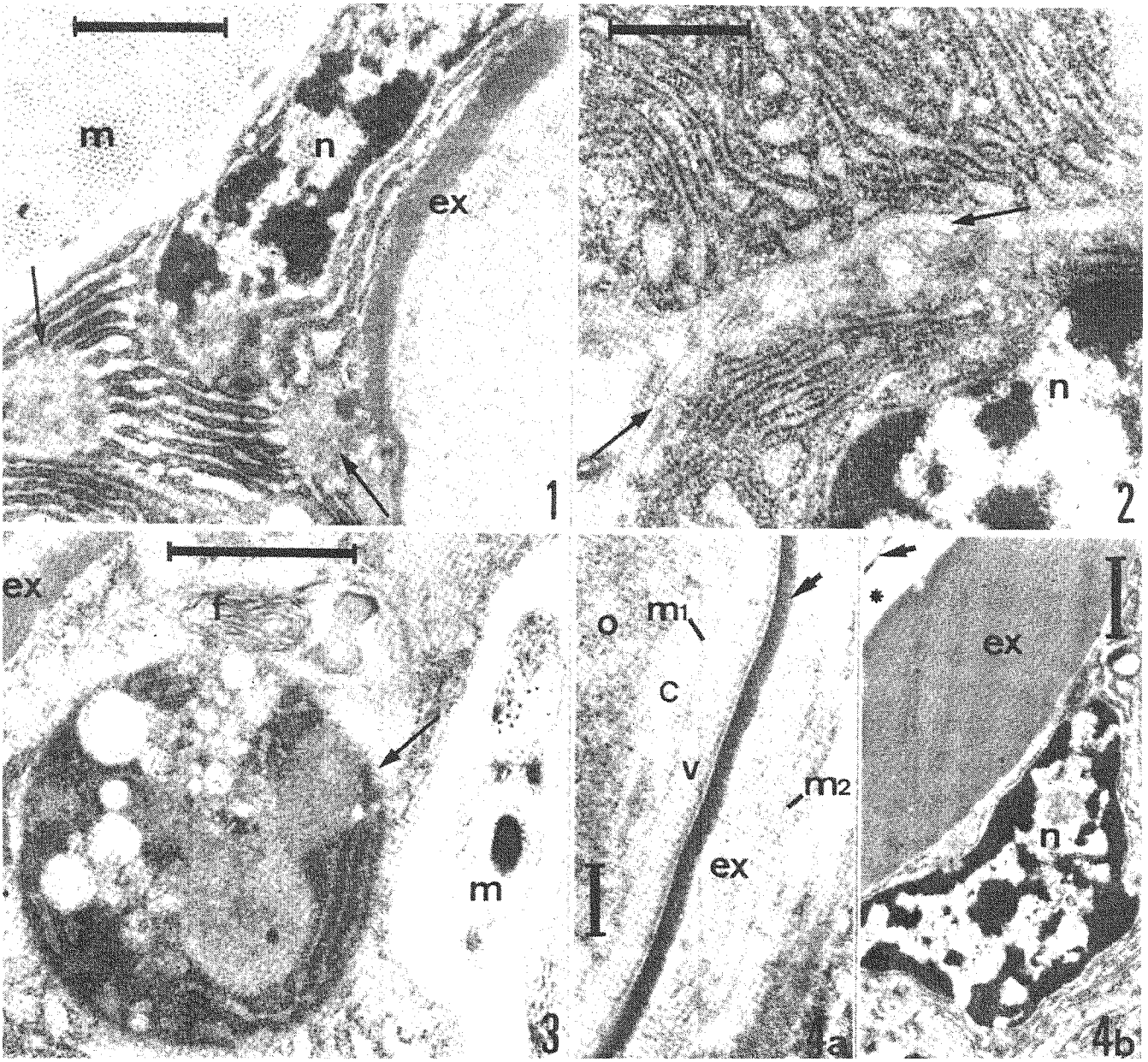

Figure 1. General features of the follicular epithelium of *Pseudacteon solenopsidis*. Note that the follicle cell cytoplasm is mainly constituted by Golgi complexes (**arrows**) directly linked up to cisternae of rough endoplasmic reticulum. **ex**- exochorion; **n**- nucleus; **m**-inner muscular layer that covers the ovary. scale bar: 1.2μm.

Figure 2. Detail of the basal lamina or "tunica propria" (**arrows**) of adjacent follicles (ovarioles) of *P. solenopsidis*. Note the reduced space between them and the lack of a well developed tunica externa. **n**- nucleus. scale bar: 0.8μm.

Figure 3. Detail of the follicle cell degeneration and internal muscle cells observed among the ovarioles of *P. solenopsidis*. **f**- myelin figure; **m**-muscle cell; **arrow**- eletrondense vacuole showing cellular debris; **ex**- exochorion. scale bar: 1.2μm.

Figure 4. Initial (**4a**) and final (**4b**) phases of the chorionogenesis process observed in the ovary of *P.solenopsidis*. (**4a**), note that the exochorion (**ex**) is formed by a feeble/granular material (compare with **Fig. 1** and **Fig. 3** in which are shown the beginning of the exochorion in different degrees of condensation); (**4b**), observe the condensed exochorion (**ex**). **o**- inner ooplasm; **c**- oocyte cortical cytoplasm (periplasm); **v**- vitelline membrane; arrows-endochorion; **m1**- oocyte membrane; **m2**- follicle cell membrane; **n**-nucleus ***** - artifact between exo and endochorion produced during sectioning. scale bars: (**4a**) 0.15μm; (**4b**) 1.1μm.

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