

Features of embryonic membranes of the jumping bristletail,  
*Pedetontus unimaculatus* (Insecta: Microcoryphia: Machilidae)

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Heymons and Heymons (1905) reported that the amnion is formed without the process of anatrepsis or the formation of amnioserosal fold in a machilid, *Trigoniophthalmus alternatus*. However, through the detailed study on the formation of embryonic membrane for *Petrobius brevistylis*, Larink (1969) found a folded structure situated ventrally to the germ disc, and he homologized it with the amnioserosal fold in the Thysanura-Pterygota. I also observed a similar structure in early stages of embryogenesis in *Pedetontus unimaculatus*, but some differences were observed between the fold in *P. unimaculatus* and the amnioserosal one in the Thysanura-Pterygota.

In *P. unimaculatus* a small germ rudiment is formed at the posterior end of the egg by the concentration of blastoderm cells (Stage 1 E, Machida, 1981). The germ rudiment is hemispheroid, and acquires centrifugal cell-arrangement in vertical section. From the characters of the stainability and form of nuclei, most of the cells of the germ rudiment, occupying the dorsal, are embryonic in nature, and the ventrally-layered cells of the germ rudiment are blastodermal (=serosal). Within a short time, the cytoplasm of cells in the embryonic area withdraws from the ventral, and the separation occurs between the embryonic and blastodermal areas. Now the embryo is ventrally covered by the "blastodermal layer" with the intervention of a "blastodermal cavity", and the blastodermic cuticle is found in the cavity (Machida and Ando, 1985). From Stage 2 (pear-shaped germ band) to Stage 3 (beginning of segmentation), the amniotic cells begin to be produced from the margin of the embryo. In parallel, the "blastodermal layer" ventrally covered the embryo commences to withdraw from the original position and to move forward on the egg surface. In not a long time, as seen in the other insects, the whole blastoderm (=serosa) is replaced by the newly formed amnion, changing itself into a secondary dorsal organ, which degenerates later.

In *P. unimaculatus* the layer formed under the embryo is either blastodermal or serosal in nature, and it is not homologous with the amnioserosal fold in the Thysanura-Pterygota. As the other machilids, the amnion which is homologous with that in the Thysanura-Pterygota is indeed formed in *P. unimaculatus*. The formation of amnion, however, does not occur until after the formation of the "blastodermal layer" or at about the time of the withdrawal of this layer from the original position. We can also find difference in the mode of formation between the "blastodermal layer" in *P. unimaculatus* and the amnioserosal fold in the Thysanura-Pterygota; the "blastodermal layer" is formed with the separation of germ rudiment, whereas the amnioserosal fold with the epiboly.

#### References

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