

Embryonic Development of *Eucorydia yasumatsui* Asahina (Insecta: Blattodea, Corydiidae)*

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In cockroaches or “Blattaria,” about 450 genera and 3,500 species have been described. The species vary enormously in size and anatomy, and range in habitat. It has long been known that “Blattaria”, Isoptera and Mantodea are closely related, and an assemblage of the “Blattaria”, Mantodea and Isoptera or the Dictyoptera is well supported to be monophyletic (e.g., Kristensen, 1991; Klass and Meier, 2006). Recent phylogenetic works based on morphological and molecular evidence suggest a subordinate position of Isoptera in “Blattaria”, and the monophyletic group including both is usually called “Blattodea”. Seven or eight principal lineages are revealed in “Blattodea”: Blattidae, Lamproblattidae, Tryonicidae, Nocticolidae, Corydiidae, Blaberoidea (an assemblage of “Blattellidae” and “Blaberidae”), Cryptocercidae, and Isoptera (e.g., Klass and Meier, 2006; Ware *et al.*, 2008; Djernæs *et al.*, 2012). However, the relationships among these blattodean principal lineages have been highly controversial. Against such a background, we have started a comparative embryological study of Blattodea for reconstruction of its groundplan and phylogeny. Many embryological studies have been conducted on Blattodea, but most of them concern the Blattidae and “Blattellidae” (e.g., Wheeler, 1889; Heymons, 1895). As a first step of our studies, we have tackled the embryological study of Corydiidae, on which no embryological study has been made, using a Japanese corydiid, *Eucorydia yasumatsui* Asahina.

The outline of embryonic development of *Eucorydia yasumatsui* was described, focusing on the formation and growth of the embryo and blastokinesis as well as the behavior of mycetome. Migrating to the egg surface, cleavage nuclei form the blastoderm, of which posterior half is with a higher cellular density. In the ventral side of the area of blastoderm with higher cellular density, a pair of areas with higher cellular condensation appears. After a while, the paired areas come near and fuse with each other to form a heart-shaped embryo.

The embryo gradually elongates and anteriorly migrates towards the middle of the ventral side. At this stage, anatrepsis completes. Soon the segmentation and formation of appendages occur. Masses of symbiotic bacteria, which are called “mycetomes”, migrate from both anterior and posterior poles toward the center of the egg to fuse there. As katatrepsis occurs, the serosa is concentrated toward the region just posterior to the developing head, forming the secondary dorsal organ. The definitive dorsal closure proceeds, and the embryo acquires its definitive form. The embryo of *E. yasumatsui* develops, keeping its original position on the egg’s ventral side without changing its anteroposterior axis throughout development. That is, the blastokinesis in the corydiid *E. yasumatsui* is of the “non-reversion type”.

References

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