

Developmental Studies on *Eucorydia yasumatsui* Asahina, 1971  
(Insecta: Blattodea, Corydiidae)

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Dictyoptera, which is composed of three polyneopteran orders, Mantodea, “Blattaria” and Isoptera, has well supported to be monophyletic based on morphological characters, with confirmation from many molecular-based analyses. In contrast to its accepted monophyly, relationships of these three orders within Dictyoptera have been disputed strongly. Aiming at the reconstruction of phylogeny and groundplan of Dictyoptera and Polyneoptera, I have started the embryological study of Corydiidae, using a Japanese corydiid *Euorydia yasumatsui* Asahina, 1971, as a first step of comparative embryological study on Blattodea (= “Blattaria” + Isoptera).

Establishing the culture of *Euorydia yasumatsui* collected in the Yaeyama Islands, I examined and described its egg structure, embryonic and postembryonic development. The present study revealed that *E. yasumatsui* performs the full elongation of embryo on the egg surface, and employing the critical techniques clearly demonstrated the formation of embryo with the fusion of paired area with higher cellular density the first time in the “Blattaria”. The present study corroborated the autoapomorphies of Polyneoptera Mashimo *et al.* (2014) proposed. As for the groundplan of Dictyoptera, 1) the oviposition with the formation of the ootheca and 2) the micropyles grounded on the ventral side of the egg are enumerated, and both are the apomorphic groundplan of Dictyoptera. Present study also revealed that *E. yasumatsui* of Corydiidae, which is often regarded as representing one of the basal clade of “Blattaria”, has mycetomes, and the possession of *Blattabacterium* as the symbionts in the form of mycetomes is deduced to be an apomorphic groundplan of

Blattodea.

*Eucorydia yasumatsui* was revealed to perform the blastokinesis of the “non-reversion type (N)”, which is not accompanied by the reversion of the embryo’s axis, as the other blaberoid cockroaches and Mantodea. In Dictyoptera, there exists another type of blastokinesis or the “reversion type (R)”, which involves the reversion of the anteroposterior axis of the embryo. The present study proposed a phylogenetic reconstruction of Dictyoptera as “Mantodea (N) + Blattodea [= Blaberoidea (N) + [Blattoidea (R) + Isoptera (R)]]”. Concerning the blastokinesis type, the groundplan of Blattoidea plus Isoptera is the “reversion type”, and that of Blaberoidea and of Mantodea is the “non-reversion type”.