

Peer Review

Review of: "A Developmental Table for the Florida Carpenter Ant *Camponotus floridanus*: Establishing Foundations for Mechanistic Studies of Development and Evolution in Ants"

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This is a very valuable contribution. I made a number of corrections (PDF file and below) and suggestions. I am looking forward to seeing this published after minor revision.

Introduction

"Ants are also positioned at the base of insects with complete metamorphosis (Holometabola)"

This statement is wrong (or at least greatly inaccurate); Hymenoptera are the sister group of the remaining Holometabola (=Aparaglossata) (Wiegmann et al. 2009; Beutel et al. 2011; Misof et al. 2014).

"placed it within the monophyletic tribe Camponotini..." I guess, as the name suggests, it was placed in this tribe before that study; maybe use "confirmed".

Stage 5.

"This germline capsule is a unique feature of the genus [48]" for how many genera is data available?

Stage 6.

"other known hymenopterans such as *Apis mellifera* and *M. pharaonic*" this should be "other hymenopterans with known embryonic development..."

Stage 12. "(bilateral pairs of labrum, maxilla, and..."

Really bilateral pairs of labrum? This surprises me. The labrum is generally an unpaired structure in immature and adult insects, including ants.

“position is homologous” a homologous position? “Equivalent” might be better.

Stage 14.

“lining of the future larval mouth” should this maybe be “larval cibarium”? Note that in larvae (and adults) there is a functional (outer) mouth opening between the mouthparts and an anatomical mouth opening (anterior end of pharynx, below the frontal ganglion).

“giving rise to headless larvae” these larvae are not headless; they still have mouthhooks, the cephalopharyngeal skeleton (aka cephaloskeleton), etc. In fact, only the external head capsule is largely reduced (see Wipfler et al. 2012).

When is the midgut formed and connected to the stomodaeum and proctodaeum? When do Malpighian tubules appear? Formation of elements of the CNS? Muscles?

2.2. Larval development

“measuring head capsule width against frequency of the larvae” meaning unclear

2.2.1. Larval development

“The gula is seen anterior to the T1” hymenopteran larvae do not have a gula (e.g. Beutel et al. 2008; Di et al. 2025)! I would say at least the detailed anatomical study of Li et al. (2025) on the *Ooceraea* larva should be cited.

“The 1st instar larvae lack hairs on the posterior end, yet have cuticular hairs” what kind of hairs, presumably setae (articulated hairs with sockets)?

This should be corrected throughout the manuscript.

3rd instar

“450 µm to 530 µm, and a length of 1600 µm to 2700 µm”

Does this mean exactly 1600 µm or rather 1.6 mm?

“The proportionate growth of the larval thorax and abdomen is greater than that of the head”

This is not surprising, as the head capsule is a compact sclerotized structure and cannot simply expand.

“The pair of tentorial pits are less pronounced compared” which ones, anterior or posterior?

4th instar

“and a length of 3000 µm” exactly 3000 µm, better use ca. 3 mm?

“antennae with 3 sensillae” the plural is sensilla, and what kind of?

“The central tip of the labium contains” meaning of central tip of the labium unclear, and I cannot see any silk glands on this figure 11m. Generally, glands (complex in ants) can only be properly documented using histological methods. I strongly doubt that these glands are restricted to the labium.

“mixture of cuticular hairs uniformly” what means a mixture here, different length classes?

“unbranched denticulate found throughout the length” unclear

Material and methods

The methods are described in detail and are certainly adequate for the aims of the study.

Generally, that the developmental stages are mostly similar to the conditions found in *Drosophila* and the pharaonic ant is not really surprising, as the same criteria were used to define them. This is a somewhat circular argumentation.

The study is magnificently illustrated. In Fig. 17, “bastoderm” should probably be “blastoderm.”

References: I would add Li et al. 2025 on the larva of *Ooceraea*.

Linguistically, repetitions should be reduced to a minimum. Some language polishing is required.

Attachments: available at <https://doi.org/10.32388/HH510W>

Declarations

Potential competing interests: No potential competing interests to declare.