

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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In this manuscript, the authors detail the embryonic and postembryonic development of *Camponotus floridanus*. As the authors compellingly argue, the resource will provide helpful landmarks and time points for studies on heterochrony and caste determination. The measurements of body size and allometry are nice additions that offer additional insights into caste determination in this species. The work is very detailed and clearly written and offers a fantastic resource for researchers studying ant embryogenesis and postembryonic development. I just have a few minor suggestions for this manuscript.

- The introduction nicely sets up the context for the need to develop developmental tables and clearly articulates the future utility of these tools. I think it would benefit, though, from some description about what is so radically different about *C. floridanus* embryonic development compared to other ant species (as you mention in the last sentence on p.3 and the beginning of p.4).
- "Ants are also positioned at the base of insects with complete metamorphosis (Holometabola)." Maybe replace this with "Ants belong to the Hymenoptera, which is positioned at the base of insects that undergo complete metamorphosis (Holometabola)" since ants branched off relatively late within the hymenopterans.
- I could not find Figure 1 referenced in the text.
- p. 7: "imaging data suggests" should be "imaging data suggest."

- p.12: “Furthermore, the proportionate duration of stages fairly corresponds with those described earlier for other insects with a few minor exceptions in morphology described above (Figure 8).” Is Fig 8 the correct figure to reference here?
- p.16-17: “terminal stage” and “terminal larvae” are used here interchangeably. I think these terms are a bit confusing. Since it seems to reflect the cessation of growth, I wonder if it might be better called “feeding cessation stage” or “growth cessation stage”? I think these would correspond to the “prepupal stage” in other insects, so perhaps that might be another term to consider.
- p. 17: Relatedly, the manuscript makes no reference to the prepupal stage. Instead, the feeding stage is referred to as larval development, and then it transitions immediately to pupal development. I think it would be good to categorize the stage between the feeding cessation and larval-pupal ecdysis as the prepupal stage.
- p. 19: “so that at day16-17 they were dark black” Space is needed after day.
- Figure 13 (and Figure 12) are referenced before Figure 10.
- p. 20: “1mL of ice-cold PBS (1.86mM NaH₂PO₄; 8.41mM Na₂HPO₄; 1.75M NaCl; pH 7.4) was immediately” Avoid starting a sentence with a digit.
- Section 4.5: Is “normalized” the right verb here?
- Section 4.10: lowercase for the title?
- Figure 2: Would it make sense to move the e', f', and g' up next to e, f, and g? Or maybe it's better to change them to 'r', 's', and 't' (similar to how you have it for Figure 3)?
- The tiny arrowheads in Figures 2 and 3 should be increased for better visibility. Perhaps change them to larger arrows instead?
- Figure 3 legend: I think you might want to add a period at the end of each panel description.
- Figure 4 legend: Typo in the last sentence.
- Figure 8 legend: “Anterior is to the right dorsal is up.” Should anterior be to the left?
- Figure 13a: It might be good to show the average and standard deviation or, even better, individual points to show the distribution of duration.
- Figure 13 legend: missing a period after “embryos.”
- Figures 14-16: As mentioned above, it might be helpful to think about the pupal development as two distinct phases: prepupal and pupal. If you agree, it might be helpful to split these figures up into (or describe the images as) prepupal and pupal development.

Declarations

Potential competing interests: No potential competing interests to declare.