

Peer Review

Review of: "Programmed Cell Death and the Origin of Wing Polyphenism in Ants: Implications for Major Evolutionary Transitions in Individuality"

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The study is generally well-written, except for some minor issues. The developmental observations are sound as far as I can say as a non-specialist. The ancestral state estimate with representative taxon sampling (with the exception of the “basalmost” branch of ants) supports the hypothesis that PCD and apoptosis played an important role in the earliest evolution of Formicidae.

The documentation, including supplementary materials, is good.

In the case of a regular review process, I would suggest minor revision.

Minor things:

“ancestral-like” – what exactly does this mean? I do not really like the wording.

“ancestral and derived species” – derived character (states) (=apomorphies) occur, of course, but derived taxa?

“ant colonies possessed a wing polyphenism” – I would rather say “a wing polyphenism was present in”

“data suggests” – In Latin, datum is singular and data is plural

“...*Harpegnathos saltator* of which is thought to have ancestral (plesiomorphic) characteristics...”

Who thought this? Was there any evidence? I think there is no species without any plesiomorphic characteristics. Please also check the sentence, e.g., interpunctuation.

“In *H. saltator*, a species with ancestral-like characteristics” – I strongly recommend rewording.

“for which wing polyphenism in females is also known to occur” – does it occur, or is this a general feature?

“However, empirically testing this inference in Leptanillinae is challenging given their sparse global distribution across Southeast Asia, Africa, and Western Europe”

I don’t understand; do you mean they are difficult to collect?

“To reconstruct the ancestral conditions of PCD, we conducted a series of ancestral state estimation (ASEs) analyses given prior and new experimental data.”

Why don’t you simply write “We conducted a series of ancestral state estimation (ASEs) analyses given prior and new experimental data.”? Like here, the study is quite frequently unnecessarily verbose.

Declarations

Potential competing interests: No potential competing interests to declare.