Reviewer’s report

Title: Division of labour in a matrix, rather than phagocytosis or endosymbiosis, as a route for the origin of eukaryotic cells

Version: 1  Date: 22 Oct 2019

Reviewer: Damien Paul Devos

Reviewer's report:

Please review the revised manuscript and authors’ responses before indicating which of the following actions you would like to continue with:

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**Reviewer comments to Authors**
Please provide any additional comments you would like to bring to the authors’/readers’ attention in advance of publication.

The author has convincingly addressed most of my concerns. I would now recommend the article for publication. All considered, it is an hypothesis as worthy of publication as any other. I do have however, I few minor concerns to consider: Answer to my concern with L45. I was asking about clarification of the age of the archaea in the sentence, “making them much younger than Archaea or Eubacteria”. Changing the sentence to “making them much younger than prokaryotes” is not changing anything at all. This doesn’t clarify anything about the age of archaea. I do however agree that the article is long enough to discourage a more profound discussion about the age of the archaea. Despite the author’s understanding that “eubacteria” is an inadequate historical term and as corrected in the text, fig 1 still refers to “eubacterial”, “eub/arch”, …Ref 54 is about a prepublication deposited in bioRxiv. I am unsure about this journal’s policy concernig preprints. The new paragraph “Membrane encapsulation and cytosolic takeover” is still not satisfying to me, as it brely provide potential lipid sources, not an explanation of how these would have formed around the third space. How would the third space be transferred internal to the lipids? The Myxococcus example is unclear, to say the least. About our question on the assumption that eubacteria outnumbered archaea in the matrix to justify eubacterialization of the archaeal component, as a posteriory thinking, author response is is not convincing and the point is not adressed in the section “Genomic reorganization towards a eukaryotic pattern”.

**Minor issues**
Please detail any minor comments for the authors attention (spelling, typographical errors, grammatical errors, stylistic suggestions etc.) so that, once addressed, the authors may remove them from the review.

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