OPEN PEER REVIEW REPORT 1

Name of journal: Neural Regeneration Research
Manuscript NO: NRR-D-19-00503
Title: Shifting equilibriums in Alzheimer's disease: the complex roles of microglia in neuroinflammation, neuronal survival and neurogenesis
Reviewer's Name: Larry Baum
Reviewer's country: China
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COMMENTS TO AUTHORS

The roles of microglia in Alzheimer's disease are important, and this paper covers this topic well. The authors have written very clearly and used language accurately.

p. 5, Line 30: You bring up a good point about in vivo microglia likely having different types than in vitro, or not even having clearly defined types. You may comment on studies of microglia types in vivo, such as by extracting microglia from brains and performing single-cell RNAseq. I searched briefly and found a couple of examples: PMID 30471926 and PMID 30606613. Some questions you might consider: Do the in vivo types match those identified in vitro? Are there different types? Is it known what any newly identified types do? These questions are just suggestions. You may discuss in whatever way you feel is appropriate.
p. 5, Line 36: Are TGF-beta and CSF1R the only axes, or are there more? If there are more, what are they?
p. 5, Line 58: What does "around both A beta plaques" mean?
p. 9, Line 35: Explain briefly what isomorphic domains are.
p. 9, Lines 47-49: The grammar would be clearer if you inverted the order of phrases in the sentence to something like, "Recently, single-cell transcriptomic analysis of murine models of AD has characterized a novel microglial phenotype, termed disease-associated microglia (DAM)". Then the antecedent of the final phrase will immediately precede it, making the connection between the two clearer.