The topic of the work is relevant, as it concerns the search for mechanisms of the pathogenesis of the early development of AD and will be interesting for reading to a certain circle of readers. The study was carried out using modern methods, which are described in detail. In general, the article is assessed as positive, but for further publication it is necessary to take into account the comments.

Notes on the design of text and figures:

1. In paragraphs 11-12 of references don’t indicate the bibliographic data of the articles. It must be indicated.
2. In Figures 2 and 3, the graphs don’t have reliability symbols (\*\*\*), they must be indicated.
3. In the text of the “Results” chapter, in my opinion, there is no need to indicate the values of the statistical parameter used (ANOVA with Dunn’s post-tests) after each experimental value. But it needs to indicate this in the caption to Figures 2 and 3.
4. The sentence “After genotyping and formation of groups of healthy and 5xFAD animals for breeding, mice (age 0-1 day) were genotyped to further obtain primary hippocampal cell culture.” (line 19-20) is written unclear. Who was genotyped first and for what purposes?
5. It is difficult to read the text and leaf through the article in search of the necessary illustration for this text. The text of the “results” subchapters should be structured with corresponding pictures. It may be better to divide the figures according to the description in the text of each subsection, i.e. in subsection 3.1 there will be all pictures related to MFPs, in subsection 3.2 - with mdivi-1, in 3.3 - zinc.
6. Rename the title of subchapters 3.1-3.3. in this version they look more like conclusions rather than titles describing the results obtained
7. I think it is necessary to transfer some of the information about lipofuscin from the “discussion” chapter (lines 342-357) into the introduction, since the relevance of studying the mechanism and targets should be justified in the introduction, and not in the discussion.
8. «But we can assume that zinc is a toxic agent in general and its mechanism of operation is a reflection of how the introduction of an external toxic agent (similar to Aβ1-42 expression in 5xFAD) leads to an attempt of mitochondria to clean themselves and the cell from contaminants». I think it is incorrect to compare zinc and beta-amyloid peptide.
9. The text of the article does not indicate what method of animal euthanasia was used to obtain primary hippocampal cells.
10. It is necessary to justify the choice of newborn mice for isolating the hippocampus, and also indicate what gender of the animals were used.