Reviewer's report

Title: Lipid Metabolism Enzyme ACSVL3 Supports Glioblastoma Stem Cell Maintenance and Tumorigenicity

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Reviewer: Xing Fan

Reviewer's report:

This is a well-written manuscript addressing very important issue on glioblastoma stem cells with significant relevance on glioblastoma therapy. Targeting cancer specific metabolism is a new area on cancer therapy and the influence of lipid metabolism pathways on glioblastoma stem cells is largely unknown. In the current study, Sun et al elegantly demonstrate that knockdown of lipid metabolism enzyme ACSVL3 depletes glioblastoma stem cells and prevents tumor propagation both in vitro and in vivo. In addition, the authors also illustrate a molecular mechanism by which ACSVL3 is regulated by EGFR and HGF/c-Met pathways in both glioblastoma neurospheres and primary glioblastoma cells.

The discovery that ACSVL3 is required for glioblastoma stem cells is novel and has significant impact on glioblastoma stem cell biology and therapeutic development. In this revision, the authors used both GBM neurospheres and primary tumor cells and performed sufficient experiments to address requirement of ACSVL3 on glioblastoma stem cell self-renewal both in vitro and in vivo with very convincing data. Furthermore, the authors also cited adequately the concurrent literature in both background introduction and discussion sections. Therefore, this revised manuscript contains very comprehensive studies to address an important issue on developing novel therapy for glioblastoma and should be considered for publication without further changes.

Level of interest: An exceptional article

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I have no competing interests with current paper.