Reviewer’s report

Title: Genetic and bioinformatic analyses of the expression and function of PI3K regulatory subunit PIK3R3 in an Asian patient gastric cancer library

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Reviewer: Volker Wacheck

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In the current manuscript Zhou et al. report that the regulatory subunit PIK3R3 of PI3K is up-regulated in gastric cancer. The authors provide evidence that inhibition of PI3K causes G0/G1 cell cycle inhibition in gastric cancer cells and that PIK3R3 is linked to PIK3CA expression. The research question is relevant and the experimental design is appropriate to address the study hypothesis. There a few points which might be considered to further strengthen the manuscript.

1. Depending on the probe set PIK3R3 was observed in 9 or 15% of gastric cancer samples. It looks like “cherry picking” to report selectively only the higher number in the abstract. This should be revised to more accurately reflect the findings.

2. The most striking finding of this study is that phosphorylation of Akt and mTOR was unaffected by PIK3R3 knockdown. Given that PIK3R3 can be downregulated by PIK3CA inhibition/downregulation it is rather surprising that pAKT was not altered by PIK3R3 downregulation. Did the authors confirmed this finding in other cell lines? Do the authors have any hypothesis to explain this finding? This might be highlighted in more detail in the discussion (even it is beyond the scope of this study).

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

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

Declaration of competing interests:

'I declare that I have no competing interests'