Reviewer's report

Title: Identification and validation of dysregulated MAPK7 (ERK5) as a novel oncogenic target in squamous cell lung and esophageal carcinoma

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Reviewer: Ricardo Sanchez Prieto

Reviewer's report:

In this report by Gavine et al. is evaluated the deregulation of ERK5 in lung and esophageal cancer. The authors conclude that erk5 is upregulated, due to an increase in the gen copy number in a small percentage. In addition author develop a novel method to evaluate novel ERK5 inhibitors and also perform some "omic" approach to see direct target in one of the lung cancer model. In The paper is properly presented and written. In general figures are clear.

Major concern that should be addressed

In figure, 2 authors need to show an image of 2+ and 1+.

Figure 3. in line 111 is claimed that NCIh193 cells have low erk5 levels. To support this conclusion all the controls of the 3 lines should be loaded in parallel (in the same gel)

The rational for the Elisa assays is correct. However, what is the connection with the role of erk5 in lung or esophageal cancer? This is an interesting methodology approach but does not fit with the rest of the paper.

In addition, in figure 4a no endogenous ERk5 is detected in 293T cells....any explanation?

For figure 5 a nice control that is missed is to the same experiment in NCIH1793 and demonstrate if the target blocked by the XMD8-92 treatment are affected or not in a cell system with low ERK5 levels. This experiment will support the specificity of the inhibitor as wells as the target described in the phosphorylation antibody array.

Minor issues

Authors need to evaluate if other MAPK (ERK1/2) is also affected at least in the experimental model of cell culture to support the especificity of ERk5

In discussion section, round line 229, authors should consider other possibilities as ERK5 should be consider other possibilities such as erk5 degradation or stabilization (Arias-González L et al., 2013; Buschbeck M, et al., 2005)

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

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:
I declare that I have no competing interests’