Reviewer's report

Title: Musashi1 modulates cell proliferation genes in the medulloblastoma cell line Daoy

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Reviewer: Gary Hime

Reviewer's report:

This manuscript is the first to demonstrate a functional requirement for Musashi1 in medulloblastoma cells. It is well written and describes novel findings relating to downstream effectors of Musashi1 activity that will be of interest to the cancer biology and stem cell field.

I believe that it should be accepted for publication after satisfying some minor points as listed below:

1. Page 2 - "...cultured as neurosphere" should read "...cultured as neurospheres"

2. Page 3 - "In mammalian postnatal brain..." should read "In the mammalian postnatal brain..."

3. Are the authors confident that the design of the Msi1 shRNA construct did not lead to off target effects?

4. Could the authors please add to the comments on Page 8 as to why a difference in Msi1 levels between neurospheres and monolayer cultures of Daoy cells indicates that Msi1 may contribute to cancer cell proliferation. Were the monolayer cultures confluent or actively proliferating?

5. Could the authors please be a little more specific when discussing the genes in figure 4. i.e. some are components of the relevant signal transduction pathways and some are target genes.

6. Page 11 - I disagree with the conclusion "Therefore, Hedgehog does not appear to be the main contributor to the defect observed in neurosphere formation." Hedgehog signalling could indeed play a very significant role. Cyclopamine causes a marked reduction in neurosphere size. The fact that a lower concentration of cyclopamine is required in Msi1 knockdown cells may be simply because the pathway has been partially down-regulated.

In regard to the above experiment - it would be a more robust conclusion if the difference in neurosphere size could be quantified.

7. Figure 6 - Again, could the differences be quantified? Also, the figure is quite pixellated at the current size.
8. In the neurosphere formation assay (Figure 3) I am unsure why plating control cells at different densities causes a difference in neurosphere size. The neurospheres in the 250 panel are all smaller than those in the 500 panel. Overall this is a worthy study and just needs clarification as described above.

**Level of interest:** An article of importance in its field

**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