Reviewer's report

Title: Molecular fingerprinting reflects different histotypes and brain region in low grade gliomas.

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Reviewer: Pim French

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Molecular fingerprinting reflects different histotypes and brain region in low grade gliomas by Mascelli et al.

The authors describe results from gene expression analysis of 40 low grade tumors. They provide a gene signature that discriminates on tumor location in all tumors and also specifically in pilocytic astrocytomas. They are able to discriminate glial mixed tumors from PAs within the supratentorial tumors. The manuscript is well and clearly written and provides a valuable framework of data for other groups to use.

1) I do think the manuscript could benefit from including analysis on (or at the very least mention) the known genetic changes BRAF-KIAA1549 fusion gene and IDH1 mutation status. Some survival data would also benefit the impact of presented data.

2) The workflow of validation is not clear to me. The authors should have used the 34 original samples to validate their array data on QPCR. The remaining five genes should then be validated on an independent set of 18 samples. I’m not sure if this was done: as it is written the 18 extra samples are also used in the first round testing of QPCR data.

3) The data by Wong et al and Sharma et al could be used to validate the identified signatures. Also, the authors should discuss the overlap in genes identified in this study and those identified by Sharma et al.

Some minor points:

1) Please mention the use of desmoplastic infantile gangliogliomas in the abstract.

PMK2 should be PKM2

2) In the results section, clearly state which comparison was done (i.e. supra vs infratentorial ect) in the text.

3) I would like to see a discussion on the 14 genes/probes that could not be validated by QPCR. Why is that?

Level of interest: An article of outstanding merit and interest in its field

Quality of written English: Needs some language corrections before being
published

**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