Reviewer's report

Title: CD44 isoforms are heterogeneously expressed in breast cancer and correlate with tumor subtypes and cancer stem cell markers

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Reviewer: Dominique Bellet

Reviewer's report:

In this manuscript, the authors investigate potential associations between alternatively spliced isoforms of CD44 and cancer stem cells (CSCs), various breast cancer biomarkers and molecular subtypes. They present data suggesting that the analysis and study of CD44 should take the presence of various isoforms into account. In general, the techniques are quite well described and provide some useful information. However, these data do not really clarify whether CD44 expression play an important role in the tumor progression program that drives development of distinct molecular subtypes or, alternatively, is a consequence of this process.

Several issues should be addressed:

Materials and methods
Has a quality control of cell lines been performed?
Flow cytometry analysis of CD44 and CD24 should be done on mammospheres.
Aldefluor assay might be carried out in addition to ALDH1 protein expression since, for CSCs, enzyme activity is more relevant than protein expression

Results
It is stated that the concordance between CD44 mRNA and protein expression was very good in breast cell lines. It is not obvious that data shown in table 1 support this conclusion which is not really a scientific statement. What means a very good concordance?

Discussion
Does previous data clearly demonstrate that CD44 is a target of gene amplification?

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