Reviewer’s report

Title: A specific gene expression signature for visceral organ metastasis in breast cancer

Version: 0 Date: 24 Sep 2018

Reviewer: Ulrich Lehmann

Reviewer's report:

The authors address an important topic (identification of gene expression signatures predicting metastasis and the site of metastasis development).

They present the results of a pure in silico-reanalysis of existing data sets.

The re-analysis and discussion of previously published breast cancer metastasis signatures (line 150 - 178) is very helpful. However, it raises the question how valid and robust the authors' own signature is.

Table 3 is a bit misleading and has to be revised: the sensitivities and specificities scattered throughout the text have to be summarized here.

Specificities below 40 or even 30% (line 220 and 224) are of little use for anyone in the field.

This piece of in silico-work would substantially gain if the authors attempt a really independent experimental validation (using NanoString or real-time PCR) in an independent cohort of samples. Otherwise, there is a high risk that the proposed signature is not reproducible and of no practical use in the clinics (as hundreds of signatures before).
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

No

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review

Quality of written English
Please indicate the quality of language in the manuscript:

Acceptable

Declaration of competing interests
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?
If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests.

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal.