Reviewer's report

Title: p-Glycoprotein induced by YB-1 expression plays a role in increased heterogeneity of breast cancer cells: correlations with cell fusion and doxorubicin resistance

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Reviewer: Yuji U Basaki

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Major Compulsory Revisions

Title: p-Glycoprotein induced by YB-1 expression plays a role in increased heterogeneity of breast cancer cells: correlations with cell fusion and doxorubicin resistance

Yang and colleagues describe in the role of YB-1 on drug-induced cell fusion event in breast cancer cell lines. Furthermore, the authors investigated the involvement of YB-1 and p-glycoprotein, ABCB5 on drug sensitivity for doxorubicin and unique morphological appearances.

Comments:
1. Results section: The IC50 values of resistant clone for anticancer drugs including doxorubicin should be presented.
2. The results section is difficult to follow and needs to be rewritten.
3. It would be helpful to the data of microarray for reader.
4. Condition of 35 cycles in RT-PCR was too much for quantitative analysis. Real time PCR analysis was recommended.
5. In page 11, line 10, “As demonstrated in Figures 4B, C, D, and E, cell fusion was induced in doxorubicin-treated MCF-7/YB-1 transfectants (doxorubicin sensitive).” could be deleted.
6. Does expression of ERK1/2, ERK3, MDR1, and ABCB5 decreased or increased in microarray analysis?
7. If overexpression of ABCB5 was introduced, does drug sensitivity (or morphological changes) change in MCF7 cells?
8. Discussion: In some reports, gene expression profile regulated by YB-1 in ovarian cancer and in breast cancer was demonstrated (Oncogene, 2007; 26: 2736-46, Cancer Res, 2008; 68: 1504-12). Please comments the differences in the discussion.
9. In Figure 4, difference of D and E is difficult to follow.
10. In Figure 5C, what was relative level of protein expression standardize for?
11. In Figure 6, the author stated that several unique morphological changes were observed. Detection of various markers (neuronal, astrocytic, etc) was needed.

**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.