Reviewer's report

Title: Identifying Significant Genetic Regulatory Networks in the Prostate Cancer from Microarray Data Based on Transcription Factor Analysis and Conditional Independency

Version: 4 Date: 31 July 2009

Reviewer: Ao Li

Reviewer's report:

The authors updated this manuscript according to the comments and showed new results from modified procedure to generate gene regulation network. However, some of the results are skeptical and thus more detailed information is required for validation.

Major Compulsory Revisions:

1) The authors should provide more detailed information about the multiple test corrections they conducted in this study. For example, during the procedure to generate initial gene network (pg.11), what is the threshold for Bonferroni correction in order to identify dependent genes and how many genes passed the test and were used for further analysis? Usually this step will filter out many candidates and thus change the reconstructed regulation network significantly. However, it is weird to find out the results of network analysis shown in figure 9, 10, 12 and 13 in the new manuscript are totally unchanged (see figure 7, 8, 10 and 11 in the old version for comparison). Therefore, the authors should provide more data (like the networks generated with/without Bonferroni correction) to prove that the new networks will generate exactly the same results as shown in these figures.

2) New results from DAVID and GSEA analysis indicate the proposed cancer network is involved in some critical biological functions and processes. While from my experience, it is not very common to identify so many extremely significant results from enrichment analysis, for example, p-value of 1.52E-68 after Bonferroni correction in supplementary files 4 and p-value of 2.57E-39 in supplementary files 5. The authors may need to double-check these p-values and provide the list of genes used for enrichment analysis so that the results in supplementary files 4, 5 and 6 can be repeated.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.
Declaration of competing interests:

I declare that I have no competing interests