Reviewer’s report

Title: Elucidating mechanistic insights into drug action for atopic dermatitis: a systems biology approach

Version: 1 Date: 03 Aug 2017

Reviewer: Reiko J Tanaka

Reviewer’s report:

This paper aims to identify different mechanisms underlying the effects of two commonly used treatments (Betamethasone valerate and Pimecrolimus) of AD by intensive pathway enrichment analysis using the transcriptomic data taken from 10 AD patients. The results confirmed well-known mechanisms and also suggested new unknown mechanisms as potential therapeutic targets.

Minor comments:

1. 117: Could you justify why "2-fold change" was used, and explain how this affects to the results (sensitivity analysis)?

1. 122: "statistical methods" need more detailed information or appropriate references to be cited. For example, how was the variability among the 10 patients treated in the statistical analysis?

1. 131: Could you add some explanation of what "Gene Expression Overlay feature" is?

Table 1:

* "Plays important role" - could this expression be a bit more elaborated?

* It may be easier for the readers to have 2 separate Tables: one for the pathways affected by BM and another for PC.

1. 322: "established" sounds too strong, given that the results are based on the data from only 10 patients. Could you comment on generalizability of the results, or replace "established" by "suggested"?

Fig 3a: Too complex and too detailed - is there a way to simplify to make the message clearer? This comment is applicable to all the figures taken from eSKIN screen shot.

Fig 3b: NfkB is unaffected for 8 out of 10 patients. Could you add some explanations on how Fig 3b demonstrates the effects of deactivation of NfkB?
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.

Yes

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

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