Reviewer’s report

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

Version: 1 Date: 20 Sep 2017

Reviewer: Ryan F.L. O'Shaughnessy

Reviewer’s report:

Subramanian and co workers are investigating the differential effects of Beta Methasone (BM) and Pimecrolimus (PC) by investigating gene expression data of treated AD patient skin, and then interrogating these data with a proprietary analysis program eSkin

Major Issues

Essentially this is a comprehensive analysis of the effect of BM and PC on eczema skin using this eSkin platform. No confirmatory or mechanistic analyses are performed. Neither is there comparison with other much more widely used analysis platforms. There would need to be analysis of the same data with another platform to demonstrate the increased utility of this highly curated dataset, and that it is not missing key pathways and genes important to skin function

All the findings are anecdotal as presented, and even what seems to me the clearest result, epidermal barrier proteins up-regulated with PC, down regulated with BM is not backed up statistically. There need to be thorough statistical analysis to identify key markers and pathways

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

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.

No

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 am able to assess the statistics

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

Acceptable

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