Reviewer’s report

Title: Correlations of Gene Expression with the Conners’ inattention and hyperactivity/impulsivity rating scales in Tourette syndrome: A Pilot Study

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Reviewer: Marquis Vawter

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Major Compulsory Revisions
In this manuscript, Tian and colleagues aimed to identify peripheral gene expression associated to inattentive and/or hyperactive/impulsive rating scales. The authors’ succeeded in identifying several probesets significantly correlated to the scales and these probesets included genes and pathways previously identified as being associated to ADHD. None of the probesets passed FDR, nor were there additional validations or confirmations of these results. Further, the significance of the results given that the subjects are primarily diagnosed or ascertained for Tourettes is not clear.

Additional specific points raised in the review are:
• Were blood cell counts significantly correlated to gene expression, and the rating scales used?
• The authors do not mention carrying out outlier detection for their subjects, which could be easily carried out by performing a principal components analysis. For the subject who stopped taking atomoxetine 40 hours before participation, what is the half-life of the medication? It would be interesting to see if this subject was an outlier with respect to the others because if by chance he/she was a poor metabolizer there may still have been small amounts of the medication in the bloodstream.
• Although the authors did not identify predictors of TS or ADHD, it would have been interesting to confirm whether their findings could lead to diagnoses of ADHD subclasses in their Tourette’s subjects since this was not carried out as stated in the Methods section.
• In the Discussion, to make things a bit clearer, the authors should re-write the “How gene expression...” section, on page 10. Specifically, the authors’ need to make sure the sentences follow each other since there is some disconnect and the ideas are not conveyed as clearly as they could be.
• The discussion could benefit from the addition of references of the similarity between brain and blood gene expression in general, as well as those pertaining to specific neuropsychiatric disorders.
• The authors’ could have considered carrying out some filtering prior to performing any analyses, such as filtering based on present or absence calls, this would have reduced the number of probesets and might have led to some
passing multiple testing correction.

Level of interest: An article of limited interest

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
'I declare that I have no competing interests'