Reviewer's report

Title: Gene expression profiles in Finnish twins with multiple sclerosis

Version: 3 Date: 11 October 2005

Reviewer: Anat Achiron

Reviewer's report:

General

-------------------------------------------------------------------------------

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

I read the authors corrections.
Although the authors answered some of the comments I am still concerned by their results.
Although the objective and significance of the study is very interesting and important, the combination of the poor dataset size and very high variation, in the aspect of disease duration and treatment does not enable concluding any conclusions about the discussed genes. Various methods such as ANOVA (analysis of variation) could have been used for controlling these noise-effects.

The method of referring only to those genes that had a fold-change > 2 (up or down), is indeed commonly used, yet as a filtration mean for omitting unchanged genes between the two groups. In the article the authors incorrectly used this method for finding the differentiated genes between the two groups. After the filtration stage, they referred to the differentiated genes as those that passed the filtration and are differentially expressed between the two groups, referring to all the samples. Any simple test such as T-test or any variant of it can be used or finding these genes. The same values that were used for the Hierarchical clustering could have been used in this scope.

-------------------------------------------------------------------------------

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

-------------------------------------------------------------------------------

Discretionary Revisions (which the author can choose to ignore)

What next?: Reject because scientifically unsound

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes