Reviewer's report

Title: Arsenic Exposure, AS3MT Polymorphism, and Neuropsychological Functioning among Rural Dwelling Adults and Elders

Version: 1 Date: 18 February 2014

Reviewer: Tadeusz Halatek

Reviewer's report:

A. Discretionary Revision

The paper in an interesting way deals with important problems of chronic environmental exposure to arsenic and the potential role of a single nucleotide polymorphism of As3MT gene in modifying this link in adults rural inhabitants. The interesting data presented by the Authors confirm a strong relation between As3MT gene and neuropsychological functioning depending on different genotype (AA, GG, AG). The methods seem appropriate, the Authors analyzed 526 participants from Project FRONTIER. The assumptions are clearly stated, data and results are accurately and properly appraised, the statistical analysis is satisfactory, the interpretations and conclusions are sound and justified by the data. The references are relevant.

The discussion and conclusions are well balanced and adequately supported by the data.

The authors are careful in drawing conclusions, but research should be continued in terms of a higher exposure to arsenic. Especially in the case of data that point to the arsenic exposure was found to be positively associated with immediate and delayed memory raw indices. This case may be related, although does not have to, with low environmental exposure to arsenic levels below 10 ppb. The discussion is missing attempts at these facts.

The title of the manuscript clearly and sufficiently reflects its content. The abstract informs the reader about the content of the paper in a short but sufficient way.

Quality of the language are satisfactory, the terminology is correct.

Level of interest: An article of importance in its field

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.