Reviewer's report

Title: Mitochondrial Proteomics of Nasopharyngeal Carcinoma Metastasis

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Reviewer: Thian-Sze Wong

Reviewer's report:

The authors used the conventional proteomic approach to identify the differential expressed proteins in 2 nasopharyngeal carcinoma cell lines, both of which have the same origin and one has the ability to migrate and metastasize. As the authors intended to use these 2 cell lines as in vitro models to convince that the differential expressed proteins between these 2 cell lines are linked to the cancer cell ability to metastasis, the origin of the cell lines and the methods used to test the metastatic potential should be provided.

The introduction session looks more like a discussion on the selection of experimental models and an explanation on the study design. The authors mentioned that DEG and DEP has been identified in the 2 cell lines but the functional relationships between the differential gene/gene products are not clarified. In this work, the authors repeated the experiments and produced a large data set with no significant difference with the previous works. If the focus is on the bioinformatics analysis, the authors could gather significantly large amount of data from the public domain. If the DEG data is also available, is there any linkage between the DEG and DEP profile? Attention should be placed on the functional role of the identified DEP in the metastasis of the NPC cells using methods other than just bioinformatics.

Further, the linkage between mitochondria and metastasis in NPC is not clarified. The authors promoted to suggest that the mitochondrial gene products are linked to the tumor metastasis. As the 2 cell lines are derived from the same parental origin, the genetic background should be the same theoretically. The authors should explain the difference in their observation supplemented with more laboratory data. In addition, in order to validate the identified DEP in the clinical settings, the authors should confirm their data in the NPC tissues rather than the cell line alone. The transwell assay could only confirm that NPC cells with altered PRDX3 had different migration rate. The effects on cancer cell metastasis could only be confirmed in animal models.

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