Reviewer's report

Title: Nanoparticle uptake by airway phagocytes after fungal spore challenge in murine allergic asthma and chronic bronchitis

Version: 1 Date: 15 April 2014

Reviewer: Amali Samarasinghe

Reviewer's report:

Major compulsory revisions:
This manuscript is extremely well written and was a pleasure to read.
1. I would like the authors to perform the studies using another fungus that produces spores that are smaller and have different surface properties.
2. Furthermore, I would like the authors to challenge the allergic mice with the particles first and determine if your ex vivo findings will translate to the in vivo setting in these conditions that are highly dependent on architectural and structural changes to the mucosa. Do phagocytes behave similarly when they are bathed in mucus in an allergic airway? Do particles have similar access to cells?

Minor essential revisions:
1. Italicize "ex vivo" in the Methods section of the abstract.
2. State the fungal species used in the study in the abstract in the methods.
3. In the introduction, the authors reference increased phagocytosis in asthmatics. Would the authors please specify the type of sputum cells discussed in the reference as it is pertinent to this manuscript. (Page 5)
4. Please mention the manufacturer noted endotoxin level in the OVA used.
5. Please change "Balb/c" to "BALB/c" throughout the manuscript.
6. There was no inflammation in the transgenic mice used as a model for COPD as shown in Table 1. While COPD is indeed an important disease of the lungs, I wonder if the inclusion of this data takes away from your findings in the asthma model. Therefore, I would like the authors to consider removing the COPD model and providing additional data on the asthma model. Visual evidence of particle uptake subdivided by the cell types macrophages, neutrophils, and eosinophils will be of great interest. Perhaps the inclusion of other fungal spores which do not have the same surface properties such the species used herein will add interest.
7. The authors highlight the difference in the particle uptake under basal conditions in untreated WT mice. The authors should return to this point in the discussion by noting if there are known differences in phagocytes between these strains of mice.
8. Remove the hyphen in "ex vivo" on page 14. Italicize the terms in the legend of Figure 1. Change the terms in Figure 1 as well.
9. It would help the reader if labels were added to the images in Figures 2 and 4 to help quickly identify the particles and cell types shown in the Figures.

10. Please include light microscopy images of representative macrophages in addition to the graph on Figure 3 especially since the authors note a heterogeneous population in the transgenic mice compared to WT controls.

11. The graph in Figure 5A is redundant as the data are already presented in Table 2.

Discretionary revisions:

1. It would be interesting to determine whether eosinophils in the lung parenchyma will function similarly to the eosinophils that traverse the epithelium into the airways, such as those used herein.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests.