Reviewer's report

Title: Influence of osteogenic stimulation and VEGF treatment on in vivo bone formation in hMSC seeded cancellous bone scaffolds

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Reviewer: Jianzhong Hu

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General Comments:
The authors presented an interesting study to ectopic bone formation in mice model and to explore the influence of osteogenic stimulation and treatment with VEGF on new bone formation and neovascularization in hMSC loaded cancellous bone scaffolds. This study was well designed. The following minor revisions might help improve the paper.

Discretionary Revisions:
1. In the methods, small samples size.

Minor Essential Revisions:
1. In the background, page 3/paragraph 2, “As it is known, human mesenchymal stem cells (hMSCs) are able to differentiate into multiple cell lineages of mesenchymal tissues such as bone, cartilage, fat, tendon and muscle due to their plasticity and high proliferation capacity in vitro [9].” According to the continuity of the context, this sentence talk about seeding MSCs on various scaffolds (e.g. biphasic calcium phosphate, calcium phosphate cement, and hydroxyapatite) to differentiate into different tissues maybe more appropriate. Meanwhile, appropriate literature should be referenced.

2. In the results, page 8/paragraph 3, “From the original amount of 2.1x10^6 hMSCs applied onto the scaffolds a mean of 7.1x10^5 cells (median 7.0x10^5 cells, range 4.1x10^5 – 9.1x10^5 cells) have adhered to the scaffold (Figure 2a). The mean seeding efficiency (Figure 2b) of all scaffolds was 64.8% (median 64.1%, range 41.7% – 83.3%).” Figure 2a and Figure 2b are described in the text, but cannot be seen in the figure 2. The authors need to add relevant figures in the Figure 2.

3. In the conclusion, page 14/paragraph 1, “Further studies are needed to clarify if VEGF is capable of stimulating murine cells. Alternatively, the use of co-cultures (e.g. osteoblasts and endothelial cells) could help to induce a sufficient blood supply in vivo and hence the new formation of bone.” Limitations should be discussed on the end of the discussion.

Level of interest: An article whose findings are important to those with closely related research interests
Quality of written English: Needs some language corrections before being published

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.