Review of: "Vimentin Regulates Collagen Remodeling Through Interaction with Myosin 10"

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Potential competing interests: The author(s) declared that no potential competing interests exist.

The exciting manuscript by Zofia Ostrowska-Podhorodecka et al. entitled “Vimentin Regulates Collagen Remodeling Through Interaction with Myosin 10” focuses on the role of Vim/Myo10 interaction in regulating extracellular matrix with regard to cancer progression. This high-level research uses different models, including KO and KD models as well as mutant cell line. The manuscript is well-written and logically structured.

However, I have several comments on the discussion of study results:

- In this work, different cell types were used, including fibroblasts and epithelial cancer cells. However, since this study considers the role of EMT in cancer progression, the additional data from normal epithelial cells would be of particular value.
- Study results have demonstrated the undoubted link between Vim and Myo10. However, SPR data showing direct interactions between Myo10 and recombinant Vim are not indicative of the same interactions between Myo10 and vimentin filaments inside the cell. Likewise, Vim/Myo10 interactions described with intracellular visualization methods do not still exclude the involvement of different adaptor proteins. In this regard, it would be interesting to see the whole composition of the Vim/Myo10 precipitates. Did the authors analyze these complexes with additional methods, for example, mass spectrometry?
- Clear explanations in the text should be made so as to distinguish between soluble vimentin/ULF/matured vimentin filaments and the role of each Vim fraction in different cellular processes.
- In SW480 cells, IPA3 increased the level of Vim and Myo10 in soluble intracellular complexes. However, the same treatment did not induce such responses in mEFs. Does it mean that, in normal fibroblasts, most of Vim is initially presented by soluble fraction? How do authors evaluate such Vim/Myo10 redistribution in cancer cells in terms of favorable/unfavorable effects in cancer progression?
- Collagen reorganization was regulated by Vim assembly, whereas only Vim expression effected collagen proteolysis and membrane translocation of MT1-MMP. Were these effects mediated by soluble/ULF Vim? Might these changes be related to Vim recruitment to FA?
- Vim KO leads to Myo10 increase in mEFs. How do authors explain this phenomenon?
- It is not clear what does “activated MT1-MMP” mean in the context of this study. MMP activation may be assessed based on its proteolytic activity data instead of antibody staining.

In general, the manuscript by Zofia Ostrowska-Podhorodecka et al. contains reliable novel data that contribute to the knowledge in the field of poorly understood mutual regulation between cytoskeleton and extracellular matrix. I would surely recommend this paper for publication. The extension of the text with the relevant discussion on the above-

mentioned issues would be appreciated.