Reviewer's report

Title: Can Peto's paradox be used as the null hypothesis to identify the role of evolution in natural resistance to cancer? A critical review.

Version: 2  Date: 6 May 2015

Reviewer: Fergal Kelleher

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Minor essential comments

1. There are aspects of the article that perhaps should be rephrased. While challenging perceived wisdom is desirable some of the phraseology regarding Peto's paradox is too dismissive. e.g. Background section 'several over-simplistic assumptions'.

2. The conclusion section in the abstract should be a simple one sentence statement of fact distilling the content of the results section rather than introducing a further additional opinion.

3. There is no mention of Max Kleiber's allometric law and should be included.

4. In the discussion on stem cells no mention is made on Yamanaka factors (Oct3/4, Sox2, Klf4, and c-Myc) and how differentiated cells can revert to a pluripotential/stem cell phenotype. This should be discussed.

5. Some of the examples given are interesting. Perhaps at times the article is a little too general in it's discussion and could benefit from more factual emphasis. This is not to suggest that a long list of examples be given but rather that a greater emphasis on facts be given to support the authors views.

6. The references are good but at times missing words or content.

Level of interest: An article of limited interest

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