

Reviewer Report

Title: On the path to reference genomes for all biodiversity: laboratory protocols and lessons learned from processing over 2000 species in the Sanger Tree of Life

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Reviewer Comments to Author:

The Authors provide a profound overview over their aim to generate genome information for a wide range of species in the tree of life project. As a scientist with hands on experience on genome sequencing, I greatly appreciated all the information here, especially detail on the differences experienced with different taxa, as this is probably the most important lesson here, that there is high variation and strategies must be adapted to that. I am also happy that many of the approaches are also available as detailed online protocols, which really helps a lot in practical work. The selected examples of size profiles also give a good impression on what differences can be expected, e.g. with different extraction methods applied to the same species. Although detailed, I think that the authors provide a lot of relevant information here and would not change that. I did also not spot any errors or flaws in the text. One thing that might be changed is the title. From first reading it I expected to hear also about assembly strategies, as well as some comparisons and oddities of the yielded genomes. It is great to have the manuscript as it is, but I like to see it better reflected in the title that the main focus here is on the wet lab part, especially the extraction of good quality DNA/RNA. I have some issues with the figures: Fig. 7: there is no mention in the legend about the y-axis scale - I assume from the text that it refers to Gigabases? Figs. 8,9, 11-15: It is a bit confusing until I realised the log scale of the numbers. I would prefer to see it not with a log scale, but in a similar way as Fig. 6, with percentages on display, and an accompanying species number somewhere on the side. In the way it is shown now, the failed proportion looks so small and gives a wrong impression. Maybe overthink the colors, I would prefer another color for the Pass ULI, which is more similar in tone with Pass, because at the moment pass ULI and fail are similar in tone and brightness and appear as being opposed to the green "pass", while the difference between "fail" and the rest should be more pronounced in my view.

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