Reviewer’s report
Title: SEQdata-BEACON: a comprehensive database of sequencing performance and statistical tools for performance evaluation and yield simulation in BGISEQ-500

Version: 0 Date: 27 Aug 2019

Reviewer: Damla Senol Cali

Reviewer's report:

In this work, the authors propose SEQdata-BEACON, a database for the sequencing performance data of BGISEQ-500. While this paper targets an important problem, which is a comprehensive database for integrating the sequencing performance data of a newer sequencing technology, BGISEQ-500, there are three major issues that make the paper not yet ready for publication.

First, although the authors categorize this paper as a Research type, the paper does not provide required details on the applied mechanisms on the collected data, in-depth comparisons with the state-of-the-art sequencing technologies, and also key insights that the readers should learn from this work. With its current shape, the paper is more like a user manual for the constructed website, which cannot be labeled as a research paper.

Second, the paper is lack of a comprehensive background on this new sequencing technology. It would be more beneficial to have a more comprehensive background on BGISEQ-500 to understand the importance of metrics included in this work, and also to make it easier to understand what are the differences between this sequencing technology and Illumina sequencing technology and better interpret the claims of the authors.

Third, the authors provide many abbreviations and terms that they do not explain throughout the paper, which get in the way of understanding. Some examples of these terms or abbreviations are PE100, total effective spot rate, BIC, SNR, FIT and accGRR.

Given these, I believe the paper is not yet ready for publication, but I encourage the authors to address these key issues and submit a major revision.
**Level of interest**  
Please indicate how interesting you found the manuscript:  

An article of limited interest  

**Quality of written English**  
Please indicate the quality of language in the manuscript:  

Needs some language corrections before being published  

**Declaration of competing interests**  
Please complete a declaration of competing interests, considering the following questions:  

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?  
2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?  
3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?  
4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?  
5. Do you have any other financial competing interests?  
6. Do you have any non-financial competing interests in relation to this paper?  

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.  

I declare that I have no competing interests.  

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.  

I agree to the open peer review policy of the journal.