Reviewer Report

Title: Artifact-free whole-slide imaging with structured illumination microscopy and Bayesian image reconstruction

Version: Original Submission **Date:** 9/18/2019

Reviewer name: Chris Armit

Reviewer Comments to Author:

This Data Note describes artifact-free whole-slide imaging with Structured Illumination Microscopy (SIM) and utilises a novel devignetting solution to stitch individual images together. The manuscript is well written and the supporting cellular-resolution image data is of high quality. It is noteworthy that the authors have published SIM data previously in GigaScience. However, whereas the latter study utilised cell line data, the data outlined in this newly submitted manuscript is clinically relevant as they represent human tissue samples derived from cancers of the prostate, skin, ovary, and breast. This new study additionally includes human tissue samples of tuberculosis of the lung. The tissue samples are obtained from a commercial source, and the authors detail the source company and product number, which is important for data provenance. It is additionally noteworthy that the SIMToolbox software used in this study is openly available and has been ascribed a GPLv3.0 license.
A major strength of this Data Note is the novel devignetting solution the authors utilise to improve image stitching. This is a known problem in whole-slide imaging, and I commend the authors for delivering artifact-free whole-slide images of human tissue samples. I see great value in the SIM datasets and I anticipate that they can be reused in several ways, for example by researchers wishing to explore whether machine-learning approaches can be used to annotate SIM images of human tissue in health and disease. In addition, and as the authors explicitly state in the Reuse potential section, "the unstitched image tiles provided in the dataset, which still contain vignetting artifacts, may be used to reproduce the results of our devignetting process, as well as to further develop more sophisticated devignetting approaches suited for SIM." I consider this an excellent point and I would strongly encourage GigaScience to archive both the unstitched image tiles and the processed image data outlined in this study.

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