Reviewer Report

Title: Imaging tissues and cells beyond the diffraction limit with structured illumination microscopy and Bayesian image reconstruction

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Reviewer name: Chris Armit

Reviewer Comments to Author:

In this Data Note of Structured Illumination Microscopy (SIM), the authors report on a novel incoherent illumination setup that they claim has key advantages over the more conventional use of coherent illumination patterns as defined by laser interference. In support of this claim, the authors provide convincing evidence of elimination of patterned artefacts in the context of cell cultured A431 human skin carcinoma cells (Figure 5), cell cultured HepG2 human liver carcinoma cells (Figure 7) and rabbit seminiferous tubules (Figure 6). The manuscript is well written, and the authors should be commended for using the lookup table isolum (Figure 6h) to present SIM depth-coded image data in such a clear and highly informative manner. In addition, the authors should be complimented for providing movies that allow cross-comparison between widefield, OS-SIM, and Map-SIM and that highlight the advantages of using maximum a posteriori probability image estimation structured illumination microscopy (MAP-SIM).

Level of Interest

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