**A guide to build a highly inclined swept tile microscope for extended field-of-view single-molecule imaging**

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Dear Editor,

Enclosed is an article regarding detailed instruction on how to build a highly inclined swept tile (HIST) microscopy and its usage for single-molecule imaging. This has been invited by Dr. Jialan Zhang.

Single-molecule imaging has greatly advanced our understanding of molecular mechanisms in biological studies. However, it has been challenging to obtain large field-of-view, high-contrast images in thick cells and tissues. Here we introduce highly inclined swept tile (HIST) microscopy that overcomes this problem. A pair of cylindrical lenses was implemented to generate an elongated excitation beam that was scanned over a large imaging area via a fast galvo mirror. A 4*f* configuration was used to position optical components. A scientific complementary metal-oxide semiconductor camera detected the fluorescence signal and blocked the out-of-focus background with a dynamic confocal slit synchronized with the beam sweeping. We present a step-by-step instruction on building the HIST microscope with all basic components.

Our method should be of interest to many researchers, and I believe it will be a valuable tool for super-resolution fluorescence imaging for whole cells and tissues, single-molecule tracking and single-molecule RNA FISH for detecting rare transcriptional mutants. Note that our work was published on [*Optica* **5**, 1063-1069 (2018)](https://www.osapublishing.org/optica/abstract.cfm?uri=optica-5-9-1063).

Thank you very much for kindly considering our work, and we look forward to hearing from you.

Sincerely,

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