

# Live cell imaging with Single molecule-guided Bayesian localization super-resolution microscopy

Fan Xu<sup>1</sup>, Mingshu Zhang<sup>2</sup>, Wenting He<sup>2</sup>, Fa Zhang<sup>1\*</sup>, Pingyong Xu<sup>2\*</sup>

1. Key Lab of Intelligent Information Processing, Institute of Computing Technology,  
Chinese Academy of Sciences, Beijing 100190, China.

2. Key Laboratory of RNA Biology, Institute of Biophysics, Chinese Academy of Sciences,  
Beijing, 100101, China

E-mail: pyxu@ibp.ac.cn

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Recently several super-resolution (SR) techniques have been successfully applied to image cellular dynamics in living cells, and they are requisite tools for analysis of biological problems. However, the current methods either require sophisticated optical setups and deep experts or have difficulties to achieve high spatial and temporal resolutions simultaneously. We propose a powerful single molecule guided Bayesian localization microscopy (SIMBA) which is easy to use and is easy to combine with total internal reflection fluorescence microscope (TIRFM), PALM, STORM and light-sheet microscopy without any additional hardware and expertise[1]. The whole cell SIMBA image of fixed actin network shows various distinct actin structures, such as actin filaments, actin bundles, and ruffles, which are reliable compared with PALM and achieved 50nm spatial resolution. For live cell imaging, SIMBA calculates a series of whole cell live structures with a 0.5-2 s temporal resolution for 50 time points on a desktop computer and reveals that clathrin coated pits (CCPs) are highly dynamic structures involving assembling and disassembling of individual ring-like pits by interacting with each other. With high temporal-spatial resolution, SIMBA will be widely used in variety of live-cell super-resolution imaging applications.

## REFERENCES

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