MOUSE BRAIN SLICE IMAGING WITH WIDE-FIELD OPTICAL COHERENCE MICROSCOPY

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KEY WORDS: Wide-field imaging, optical coherence microscopy, brain slice.

The imaging capability of optical coherence microscopy (OCM) has great potential to be used in neuroscience research because it is able to visualize anatomic features of brain tissue without labeling or external contrast agents. However, the field of view of OCM is still narrow, which dilutes the strength of OCM and limits its application. In this study, we present fully automated wide-field OCM for mosaic imaging of sliced mouse brains. A total of 308 segmented OCM images were acquired, stitched, and reconstructed as an en-face brain image after intensive imaging processing. The overall imaging area was 11.2×7.0 mm (horizontal×vertical), and the corresponding pixel resolution was 1.2×1.2 μm. OCM images were compared to traditional histology stained with Nissl and Luxol fast blue (LFB). In particular, the orientation of the fibers was analyzed and quantified in wide-field OCM.