Title
Mapping out lesion heterogeneity on (sub)cm scale with a fast large area multiphoton exoscope (FLAME)

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Abstract

Multiphoton microscopy can provide sub-micron resolution images of living tissues in their native environment with chemical contrast. We recently reported on a fast large area multiphoton exoscope (FLAME) for rapidly mapping out macroscopic tissue areas (cm-scale) with microscopic resolution. In this presentation we demonstrate the imaging capability and the clinical utility of this system by performing a pilot study on ex vivo imaging of benign and malignant pigmented lesions of human skin. We identify morphological features such as cytological atypia, lentiginous hyperplasia, migration of melanocytes and demonstrate the value of sampling large tissue volumes for capturing the lesion heterogeneity.