Sub-Surface Fluorescence Topography (SSFT)

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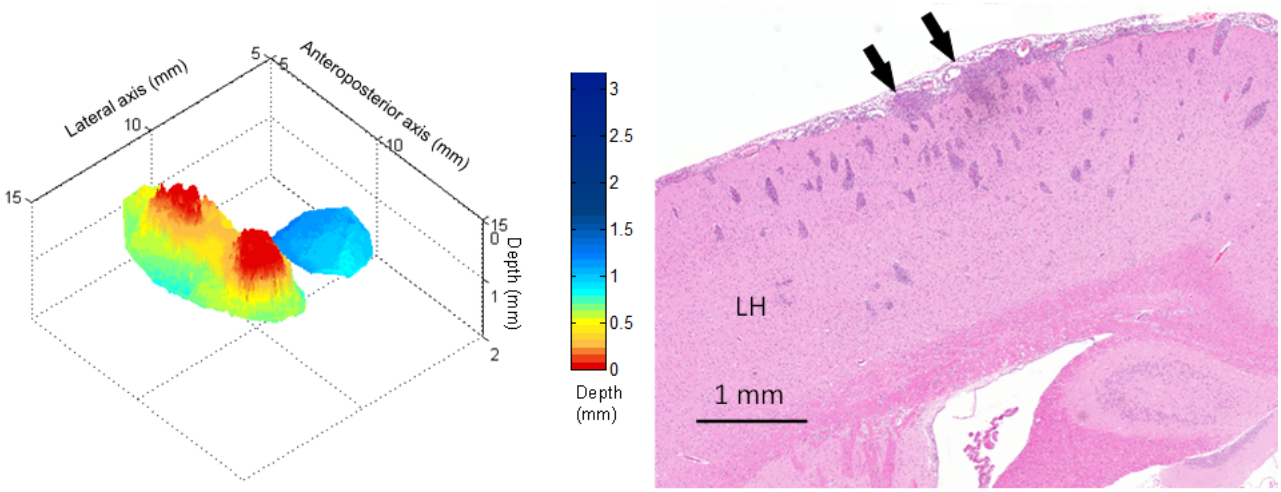
Technology description

Finding buried tumors with depth-resolved fluorescence imaging
University Health Network’ s biophotonics group has developed a fluorescence imaging technique which provides a depth-resolved map of buried fluorescence, a technique called Sub-Surface Fluorescence Topography (SSFT). The primary application is detection and mapping of fluorescently-labeled tumors that reside beneath the tissue surface within the first 10 mm. This technique can aid surgeons by localizing buried residual tumor, providing better information to guide decision-making in proceeding with the resection. This instrument extracts information from the sub-surface fluorescence and is able to reconstruct topographical maps of the fluorescently-marked buried tumor; current intraoperative imaging does not provide this information. A proof-of-concept imager has been built with the development of a clinical system for intracranial brain tumor resection currently underway.



Another example of a brain tumor in a mouse model, this time with the left side having superficial tumor and the right side a more deeply buried inclusion. Left: SSFT (depth-resolved) image of the tumor; Right: H&E histology showing the tumor (on the left hemisphere).

Publications

Kim A, Roy M, Dadani FN, Wilson BC. Topographic mapping of subsurface fluorescent structures in tissue using multiwavelength excitation. J Biomed Opt. 2010 Nov-Dec; 15(6):066026

Application area

Intra-operative guidance for brain tumor resection
General usage in all surgical oncology procedures

Institution

University Health Network

Inventors

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