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Titel des Beitrags:
Deep-tissue reporter-gene imaging with fluorescence and optoacoustic tomography: a performance overview.

Abstract:
A primary enabling feature of near-infrared fluorescent proteins (FPs) and fluorescent probes is the ability to visualize deeper in tissues than in the visible. The purpose of this work is to find which is the optimal visualization method that can exploit the advantages of this novel class of FPs in full-scale pre-clinical molecular imaging studies. Nude mice were stereotactically implanted with near-infrared FP expressing glioma cells to form brain tumors. The feasibility and performance metrics of FPs were compared between planar epi-illumination and trans-illumination fluorescence imaging, as well as to hybrid Fluorescence Molecular Tomography (FMT) system combined with X-ray CT and Multispectral Optoacoustic (or Photoacoustic) Tomography (MSOT). It is shown that deep-seated glioma brain tumors are possible to visualize both with fluorescence and optoacoustic imaging. Fluorescence imaging is straightforward and has good sensitivity; however, it lacks resolution. FMT-XCT can provide an improved rough resolution of ~1 mm in deep tissue, while MSOT achieves 0.1 mm resolution in deep tissue and has comparable sensitivity. We show imaging capacity that can shift the visualization paradigm in biological discovery. The results are relevant not only to reporter gene imaging, but stand as cross-platform comparison...
for all methods imaging near infrared fluorescent contrast agents.