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Dye-Enhanced Multimodal Confocal Imaging of Brain Cancers DENNIS WIRTH, University of Massachusetts Lowell, MATIJA SNUDERL, SAMEER SHETH, WILLIAM CURRY, Harvard Medical School, Massachusetts General Hospital, Boston, MA, ANNA YAROSLAVSKY, University of Massachusetts Lowell — **Background and Significance:** Accurate high resolution intraoperative detection of brain tumors may result in improved patient survival and better quality of life. The goal of this study was to evaluate dye enhanced multimodal confocal imaging for discriminating normal and cancerous brain tissue. **Materials and Methods:** Fresh thick brain specimens were obtained from the surgeries. Normal and cancer tissues were investigated. Samples were stained in methylene blue and imaged. Reflectance and fluorescence signals were excited at 658nm. Fluorescence emission and polarization were registered from 670 nm to 710 nm. The system provided lateral resolution of 0.6 μm and axial resolution of 7 μm . Normal and cancer specimens exhibited distinctively different characteristics. H&E histopathology was processed from each imaged sample. **Results and Conclusions:** The analysis of normal and cancerous tissues indicated clear differences in appearance in both the reflectance and fluorescence responses. These results confirm the feasibility of multimodal confocal imaging for intraoperative detection of small cancer nests and cells.

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