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Metabolite-Imaging Mass Spectrometry to Guide Brain Surgery

A rapid, mass spectrometry-based method defines tumor boundaries during cancer surgery, eliminating the need for traditional pathology evaluation.

Currently, one of the main treatments for brain tumors is surgery. Performing a tumor resection within the brain is difficult because it is not easy to distinguish tumor boundaries from healthy brain tissue. Existing imaging techniques do not provide the necessary molecular information to distinguish tumor boundaries. An unclear boundary between a tumor and healthy tissue can lead to inadequate resection if enough of the tumor remains and neurological damage if healthy tissue is removed.

Purdue University researchers have developed a method for surgeons to define tumor margins quickly during surgery using miniature mass spectrometers or separate ionization techniques. This method overcomes the need for prepping, staining, and evaluation by a pathologist. It is also possible to adapt this method for other types of cancer surgery.

Advantages:

-Overcomes need for prepping, staining, and evaluation by a pathologist

-Can be used to determine tumor boundaries

Potential Applications:

-Medical/Healthcare

-Cancer surgery

TRL: 4

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