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Electromagnetic System for the Characterization of Tissue

Background

Current treatments of cancer, whether surgical, chemical, or radiological, have a number of complications that can greatly diminish the quality of life of patients. A recognized way of minimizing these complications is by early detection of cancerous cells, and of cell characteristics that are precursors to malignancy. Treatment options are far less invasive and damaging when cancerous and pre-cancerous regions are identified early, but these early biological and morphological abnormalities are largely overlooked by current technology. Additionally, there is currently no standard technique identifying abnormal tissue at resection margins in operating rooms — this can lead to recurrence despite complete resection as determined by frozen section. Furthermore, cancers are often multifocal— a positive biopsy at one site may not give a full picture of the disease or if the cancer is multifocal or has “skip areas.”

Technology

Dr. Alan Mickelson of the University of Colorado has created an electromagnetic system useful for the characterization of tissue samples. The sample is irradiated at specific wavelengths and the scattered and fluorescent returns are received; the received light generates an excitation emission matrix and creates spectroscopic measures (see figure below). A novel pattern-recognition algorithm is then applied to classify the tissue sample, allowing for earlier and more accurate detection of tissue abnormalities, including those that are associated with cancerous and pre-cancerous states.

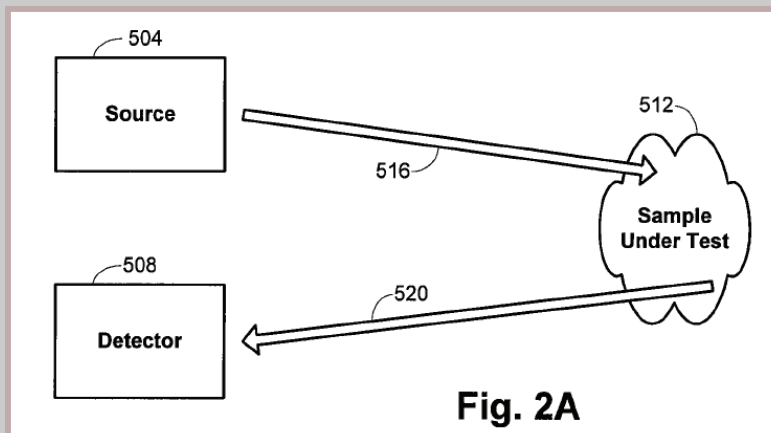


Fig. 2A

Potential Areas of Use

- ◆ Early detection of cancer
- ◆ Excision of cancerous lesions by surgeons
- ◆ Identification of biomarkers in tissue

IP Status:

Patent pending;
available for
exclusive or non-
exclusive licensing

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