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(54) Title: DUAL MODALITY IMAGING SYSTEM FOR COREGISTERED FUNCTIONAL AND ANATOMICAL MAPPING

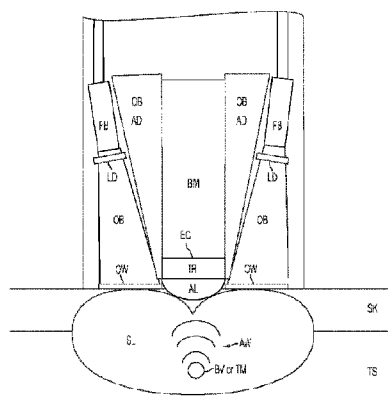


FIG. 1A

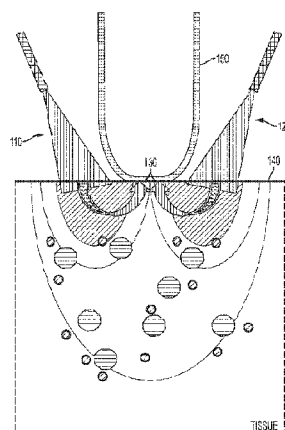


FIG. 1B

(57) Abstract: A real-time imaging system that provides ultrasonic imaging and optoacoustic imaging coregistered through applica-
tion of the same hand-held probe to generate and detect ultrasonic and optoacoustic signals. These signals are digitized, processed
and used to reconstruct anatomical maps superimposed with maps of two functional parameters of blood hemoglobin index and
blood oxygenation index. The blood hemoglobin index represents blood hemoglobin concentration changes in the areas of diagnos-
tic interest relative to the background blood concentration. The blood oxygenation index represents blood oxygenation changes in the
areas of diagnostic interest relative to the background level of blood oxygenation. These coregistered maps can be used to noninvas-
ively differentiate malignant tumors from benign lumps and cysts.



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