IMPLANTABLE SENSOR FOR USE WITH MAGNETIC RESONANCE IMAGING

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Glioblastoma multiforme (GBM) remains the most common and the most aggressive form of brain cancer especially in older adults, having a short average survival time and poor prognosis, with reoccurrence in 90% of cases. Despite advancements in both established clinical paradigms for GBM treatment such as radiation, chemotherapy, and surgical resection, and more recent experimental therapies such as immunological disruption and application of tumor treating fields, early detection remains paramount for more effective therapy leading to increased long-term survival rates.

The Invention

UW-Madison researchers have designed a novel implantable microscale inductor-capacitor to enhance signal for neuro fMRI images. The device provides in vivo tissue monitoring and/or treatment using an implantable circuit assembly with an interconnected electrical inductive element and an electrical capacitive element cooperating to produce an electrically resonant circuit having a natural resonant frequency within a range of 60 MHz to 300 MHz in the presence of surrounding tissue.

It provides the ability to monitor local tissue conditions deeply within tissue using implantable sensors readable with MRI equipment. The circuit is both small enough to be readily implanted and retained in the tissue and yet which has sufficient area to interact with ions within the tissue to promote appreciable detuning. The device can detect changes in the natural resonant frequency of the circuit assembly and these latter changes can be used to determine a measure of ion concentrations in the surrounding tissue.

Tech Fields

- Medical Imaging : MRI

For current licensing status, please contact Jeanine Burmania at jeanine@warf.org or 608-960-9846