



CANCER PREVENTION & RESEARCH
INSTITUTE OF TEXAS

Award ID:
RP130362

Project Title:
Imaging cancerous tissues with liposomal MRI contrast agents that utilize bioengineered nanovalves

Award Mechanism:
Individual Investigator

Principal Investigator:
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Entity:
The University of Texas Southwestern Medical Center

Lay Summary:

One cannot overemphasize the importance of early detection of cancerous tumors. The earlier a cancer can be detected, the more likely it can be eradicated by conventional surgery or other therapies. One of the most used methods for detecting such tumors is magnetic resonance imaging, or MRI. To better distinguish normal and cancerous tissues, a contrast agent is usually injected into the patient. However, most clinically approved contrast agents are non specific for cancerous tissues. Our proposal is aimed at designing a "responsive" or "smart" contrast agent. Briefly, we are making a nanodevice by combining biological and chemical components that will not only have a tendency to localize within cancerous tumors, but also be able to give an enhanced contrast of the cancerous environment. The design of the nanodevice may also lend itself to a "triggered" drug release that would selectively target cancer-drug delivery specifically to the cancerous tissue. Thus, the concept we propose may not only lead to smart imaging agents, but also multifunctional nanodevices that combine therapeutics as well as diagnostics (sometimes called theranostics).