



CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP100627

Project Title:
A Multimodality Image-guided System for Peripheral Lung Cancer
Diagnosis and Therapy

Award Mechanism:
Individual Investigator

Principal Investigator:
Wong, Stephen

Entity:
The Methodist Hospital Research Institute

Lay Summary:

Current approaches to lung cancer diagnosis and treatment lack to impact the long-term survival rate. Recent studies suggested that the key to resolve this issue lies in improving the detection sensitivity and specificity, localization accuracy of interventional procedures and effectiveness of therapies. For small peripheral lung cancer, a novel approach is to develop an on-the-spot earlier diagnosis and therapy system rather than wait till the lesion grows larger to confirm cancerous status. In this project we will develop a minimally invasive multimodality image guided (MIMIG) system for early diagnosis and treatment of peripheral lung cancer, by integrating macroscopic and microscopic imaging, fiber-optic fluorescence molecular imaging, and electromagnetic tracking-based intervention in one platform via user friendly 3-D visualization and navigation. This system provides a cost-effective way to diagnose and treat small peripheral lung cancer on-the-spot simultaneously; this system allows an in-vivo visualization of tumor morphology, metabolic, functional, and molecular imaging information at the cellular level beyond what current clinical imaging can offer; this system integrates data obtained from imaging and tissue analysis information for improved diagnosis performance and offers effective and appropriate interventional therapy immediately should the cancer is confirmed. The development of MIMIG will not only improve lung cancer diagnosis and treatment but also enhance our ability to understand the cancer biology, leading to new milestones in the field.