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Biomarkers for Diagnosis of Lung Cancer

Lung cancer is the leading cause of cancer deaths in the United States, with more than 150,000 deaths in 2014. While the increased use of CT screening for lung cancer has resulted in a reduction in lung cancer mortality, it has also resulted in an increased detection of benign pulmonary nodules. Patients often undergo unnecessary, costly and invasive procedures only to find that the pulmonary nodules are benign. There is a need for diagnostic tests that can differentiate between malignant and benign nodules, that when combined with CT screening provides an improved diagnostic performance.

Researchers at the Biodesign Institute of Arizona State University and collaborators have identified nineteen antigens as potential biomarkers for early stage detection of lung adenocarcinoma. An autoantibody panel was reported that had a 30% sensitivity at 89% specificity to distinguish lung cancer from high-risk controls with smoking histories. A comparison between autoantibody responses between lung cancer and patients with a CT positive pulmonary nodules revealed a related but different autoantibody panel with a sensitivity of 30% at 88% specificity. These nineteen antigens have not previously been associated with lung cancer and can be utilized on an array or other substrate as a diagnostic test in which patient sera is tested for lung cancer autoantibodies.

These biomarkers and autoantibody signature provide the first blood test that is clinically able to differentiate lung cancer patients from CT positive populations.

Potential Applications

- Diagnostic tests to detect lung cancer
 - o Can stratify subjects with positive CT nodules into benign lung disease controls and lung adenocarcinoma subjects
- Monitoring of lung cancer treatments
- Components of personalized lung cancer therapy

Benefits and Advantages

- High Specificity

- These antigens have not previously been associated with lung cancer
- The background associated with the supporting reagent for each plasma sample was estimated, providing the most rigorous assay in similar studies
- Panels have been developed to differentiate patients with lung cancer from either matched smoker controls with 30% sensitivity at 89% specificity or matched CT screen positive benign controls with 30% sensitivity at 88% specificity
- Blood test – low cost, minimally invasive

For more information about the inventor(s) and their research, please see [Dr. LaBaer's directory webpage](#)