VAN ANDEL INSTITUTE

Business Development / Technology Transfer

Application

- An antibody-based method to identify cancerous pancreatic cysts

Benefits

- High sensitivity and specificity
- Low cost
- Amenable to high-throughput

VARI IP-00177

Patent Status: Pending
U.S. 14/203,049

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Pancreatic Cancer Biomarkers

A novel method for diagnosing pancreatic cysts.

Background

Pancreatic cancer is a leading cause of death in the United States, with an estimated 40,000 new cases diagnosed annually. Unfortunately, pancreatic cancer is notoriously difficult to diagnose in its early stages. A lack of definitive diagnostic tests delays diagnoses in patients; at the time of diagnosis, more than half of all patients have distant disease and another quarter of patients have regional spread. Current clinical tests used to inform diagnosis or monitor therapeutic responses include evaluation of CA 19-9 and CEA levels. However, these tests lack specificity (they frequently register positive tests for benign pancreatic anomalies) and sensitivity (they are usually unable to detect pancreatic cancer in its early stages when it can be treated).

Technology

Van Andel Research Institute (VARI) scientists have developed an antibody-based method for analysis of pancreatic cyst fluid that distinguishes cancer precursor cysts (mucinous cysts) from non-precursors (non-mucinous cysts). The panel consists of two glycoforms of the protein, MUC5AC, and one glycoform of the protein endorepellin. VARI scientists have shown in independent sample sets (including one that was blinded) consistent performance with approximately than 85 percent accuracy. This accuracy is better than the current best marker, CEA, which has reported accuracies of 70–80 percent in various studies, and should positively impact the ability to make correct diagnoses of the cyst type.

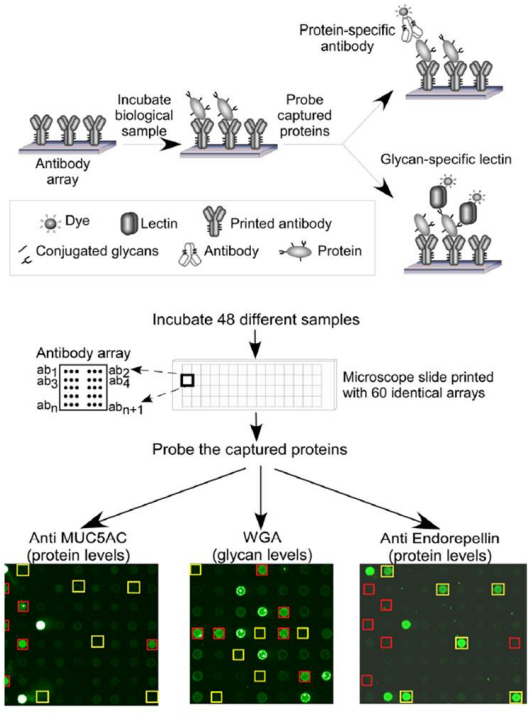

Figure 1*: Detection of individual protein abundances and glycoforms.* The proteins captured by an antibody array may be probed with either an antibody (to measure the abundance of the core protein) or a lectin (to measure the glycans on the captured proteins). Probing an array with anti-MUC5AC or anti-endorepellin antibody shows signals only at the anti-MUC5AC or anti-endorepellin capture spots, respectively, but probing the array with WGA shows signals at several capture antibodies. The brightest spots in each array (with white pixels indicating saturation of signal) are biotinylated positive- control proteins that were not used in the analysis.

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