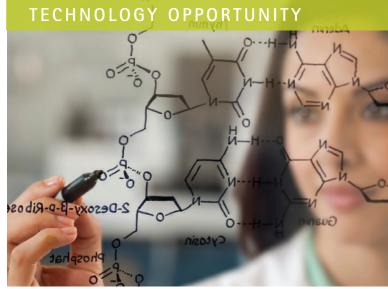## TECHNOLOGY OPPORTUNITY

Prostate Cancer Detection Advanced by DNA–Based Biomarker Panel

For non-invasive screening and diagnosis

A non-invasive test for detecting prostate cancer (PC) measures DNA methylation using a unique panel of gene biomarkers. Designed for cancer screening and diagnosis, the test relies on an assay type known to be stable and can be performed on any bodily fluid permitting extraction and concentration of nucleic acids, including blood and urine. This patent-pending technology uses measures of aberrant DNA methylation gene patterns that have been linked to PC. The composite biomarker panel demonstrated 100 percent sensitivity and specificity for PC detection in a pilot study. Because sample analysis can occur in any clinical lab setting, the test can be incorporated into national cancer screening programs.

Benefits

▲ **Highly sensitive and specific:** Features 100 percent sensitivity and specificity for prostate cancer detection, potentially at early stages, using 13 biomarkers

▲ **Non-invasive:** Utilizes easily obtained body fluids (including blood and urine), eliminating the need for complex procedures and reducing the risk for potential adverse effects to patients

▲ **Easy to use:** Works with multiple assay platforms

▲ **Cost effective:** Operates without expensive reagents, equipment, or specially trained technicians

▲ **Accessible:** Enables incorporation into national cancer screening programs

Technology Details

DNA methylation plays a significant role in PC development. The down-regulation of some genes is induced by the methylation mechanism of CpG islands in gene promoters. The methylation pattern of these genes is useful to screen and detect patients with PC.

How It Works

KAUST researchers have identified a unique panel of DNA methylation-based biomarkers from literature publications, consisting of methylated genes relevant for prostate cancer formation. Using computational models, they predicted a correlation between the expression and methylation levels of the genes and applied this correlation to predict methylation values in serum from available expression data from 43 samples. Based on this, they identified the panel of biomarkers for PC detection. The basis for the KAUST-developed biomarker composite panel is the unique subset of hypermethylated genes. The resulting non-invasive test uses methylation patterns of 13 biomarkers for PC screening and diagnosis.

Why It Is Better

Prostate cancer is a major cause of cancer-related mortality. Primary screening tools are the prostate-specific antigen (PSA) blood test, which has been questioned for its accuracy, and digital rectal examination (DRE), which is unpleasant for patients. The highly specific and sensitive test being developed at KAUST can potentially detect PC at a time when treatment can be more effective. Because the test is non-invasive, utilizes easily obtained bodily fluids, and can be analyzed in any clinical lab, its use can be incorporated into national screening programs.

IP Protection

KAUST has a patent pending for this technology.

Opportunity

This technology is part of KAUST's technology commercialization program that seeks to stimulate development and commercial use of KAUST-developed technologies.

Opportunities exist for joint development, patent licensing, or other mutually beneficial relationships.

For More Information

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