Biomarkers for Detecting Prostate Cancer

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Technology description

Prostate cancer is the second most common cancer in American men, causing more than 27,000 deaths every year. An estimated one man in seven will be diagnosed with prostate cancer during his lifetime.

Early detection is critical but today' s screening methods (prostate specific antigen or PSA testing, and digital rectal exam) are far from perfect. For example, PSA tests often detect non-significant cancers, leading to an estimated 50 percent of overdiagnoses. Needle biopsy has become the standard to confirm the diagnosis of prostate cancer, but eight to 30 punches may be required. The procedure is invasive, plagued by false negatives (as high as 34 percent) and may have to be repeated multiple times because of sampling errors.

The development of an easy and accurate test to augment PSA screening would be of enormous benefit. UW–Madison researchers have identified eight genetic markers, or biomarkers, for prostate cancer. They can be detected in histologically normal prostate samples and/or the bodily fluids of men with no history of prostate cancer.

The biomarkers act as red flags, exhibiting abnormal methylation levels when cancer is present in peripheral prostate tissue (this is called cancer 'field defect'). These changes are believed to represent early stages of the cancer process.

The biomarkers are associated with the genes CAV1, EVX1, MCF2L, FGF1, WNT2, NCR2, EXT1 and SPAG4.

Additional Information

WARF reference number P100149US02 describes the researchers' earlier work in this area.
http://www.warf.org/technologies/summary/P100149US02.cmsx

Application area

Prostate cancer screening
Early detection of men at risk for prostate cancer

Prostate cancer prognosis

Advantages

May be detected noninvasively in body fluids such as urine
May reduce the number of biopsies required to detect prostate cancer and confirm diagnosis, leading to decreased morbidity
May enable detection of prostate cancer in histologically normal prostate tissue or bodily fluids from men with no PSA abnormality
Allows patients and physicians to make more informed treatment decisions

Institution

Wisconsin Alumni Research Foundation

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