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TECHNOLOGY BRIEF

A novel approach for the early diagnosis of prostate cancer

The Challenge: Prostate cancer is the second most common cancer (300,000 new cases per year) and the second leading cause of cancer death (40,000 per year) in men in the United States. The standard screening and diagnostic test for prostate cancer measures serum levels of prostate specific antigen (PSA). However, PSA is flawed as a diagnostic because of a high frequency of false positives and false negatives. In fact, only 25-30 percent of men who have a biopsy due to elevated PSA levels are diagnosed with prostate cancer. In addition, PSA has no utility as a prognostic biomarker.

UMBI Solution: UMBI inventors have developed a diagnostic and prognostic assay for prostate cancer based on the carbohydrate binding proteins, galectins. The assay is highly sensitive and is specific for prostate cancer. It compares the differential expression of the galectins and their isoforms together with cytosine methylation of their promoters. The inventors have discovered that gal3 and gal8g are differentially expressed in various stages of prostate cancer. An increase of gal8g expression, which is a novel gal8 isoform discovered by the UMBI inventors, and a decrease of gal3 expression is an indication of prostate cancer. The inventors have demonstrated that the gal3 silencing in the early stages of prostate cancer is due to its promoter methylation. Thus, the combination of promoter methylation and galectin expression provides a sensitive and specific novel approach for the early diagnosis and prognosis of prostate cancer.

Commercial Applications:

- Non-invasive, specific prostate cancer diagnostic and prognostic assay.
- Point of care diagnostic may be developed.
- Drug efficacy screening assay for the treatment of prostate cancer.
- Research tool to study processes of neoplastic transformation.

Advantages:

- Identifies both the presence and stage of prostate cancer.
- Utility as a guide for the selection of treatment strategies for prostate cancer.
- Non-invasive, as DNA is found in the urine.

Patent Status: Pending US patent application

Licensing Potential: UMBI is seeking exclusive or non-exclusive licensees to part or all of this technology. The UMBI inventors would welcome the opportunity to collaborate with any licensee to further refine this invention or extend its capabilities.

Inventors & UMBI Reference: H. Ahmed and G. Vasta, 05-006

Relevant Publication:

1. Ahmed H, Banerjee PP, Vasta GR. 2007. Differential expression of galectins in normal, benign and malignant prostate epithelial cells: silencing of galectin-3 expression in prostate cancer by its promoter methylation. Biochem Biophys Res Commun. 358(1):241-6.

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