HPV-Positive Biomarkers for Cervical and Head and Neck Cancers

INVENTORS • Paul Lambert, Michael Newton, Dohun Pyeon, Paul Ahlquist

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing methods of using HPV-positive biomarkers to determine if a person or animal has cervical or head and neck cancer, or if a person or animal is at risk of developing one of these cancers.

OVERVIEW

Human papillomaviruses (HPVs) are the most common sexually transmitted pathogens. These small DNA viruses are associated with almost all cervical cancers and 20 to 30 percent of head and neck cancers.

Cervical cancer is the second most common cancer in women worldwide. It is a major cause of morbidity and mortality. Head and neck cancer is the fourth most frequent cancer worldwide and the sixth most common cancer in the U.S. The survival rate is less than 50 percent, and that statistic has not improved in decades.

Early diagnostic options, including the Pap smear and HPV DNA test, are available for cervical cancer. However, no such test exists for head and neck cancer, which arises in the mucosal epithelia of the mouth/throat region.

THE INVENTION

UW-Madison researchers have identified three potential biomarkers that are specific for HPV-positive cancers in cervical and head and neck tumors: testicular cell adhesion molecule 1 (TCAM1), synaptonemal complex protein 2 (SYCP2) and stromal antigen 3 (STAG3). These biomarkers can be used to detect cervical or head and neck cancer. TCAM1 and SYCP2 also can be used to detect precancerous lesions.

TCAM1, SYCP2 and STAG3 are testis-specific human genes. The inventors have shown that mRNA from these genes is expressed in HPV-positive head and neck and cervical cancers but cannot be detected in normal somatic tissues or HPV-negative head and neck cancers.

Additionally, the TCAM1 protein likely is expressed on the cell surface, which would make it an accessible, easily-assayed biomarker for HPV-positive cells in cancers and...
precancerous lesions. TCAM1 also may provide a useful target for therapies against HPV-positive cancers and precancerous lesions.

APPLICATIONS

• Biomarkers for head and neck or cervical tumors, as well as precancerous lesions that may lead to head and neck or cervical cancer
• Drug screening targets
• Biomarkers for monitoring the effectiveness of cancer treatment

KEY BENEFITS

• Provides specific biomarkers for HPV-positive cancers and precancerous lesions
• Not expressed in normal somatic cells or HPV-negative cancers
• TCAM1 likely is expressed on the cell surface, making it accessible and easily assayed
• May be used to detect other HPV-positive cancers, including anal, penile, vaginal or vulva cancer

ADDITIONAL INFORMATION

Publications

Tech Fields
Diagnostic Assays - Cancer
Drug Discovery - Targets

CONTACT INFORMATION

For current licensing status, please contact Mark Staudt at mstaudt@warf.org or 608-960-9845.