A NOVEL CARBOHYDRATE ANTIBODY TO GALNAC1-3GAL AND ITS APPLICATION FOR CANCER DIAGNOSTIC AND PROGNOSIS

SUMMARY (1024-CHARACTER LIMIT)
The National Cancer Institute (NCI) seeks licensees for a monoclonal antibody specific to the GalNAc1-3Gal antigen that is present in human carcinomas. The antibody can be used as a research tool for a variety of purposes, including immunohistochemical staining of various human carcinomas. The antibody may also be useful as a prognostic marker for cervical cancer.

NIH REFERENCE NUMBER
E-058-2009

PRODUCT TYPE
• Research Materials

KEYWORDS
• GalNAc1-3Gal, Antibody, Cervical, Larynx, Skin, Squamous Cell, Immunohistochemical staining, Prognostic marker, Gildersleeve

COLLABORATION OPPORTUNITY
This invention is available for licensing.

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STATUS
Active

DESCRIPTION OF TECHNOLOGY
Cervical cancer is one of the most common cancers among women worldwide. Currently, physical descriptors such as tumor size and depth are the primary factors used for deciding the course of treatment. Despite significant efforts to identify prognostic biochemical markers or therapeutic targets to improve diagnosis and treatment, none have achieved routine clinical use. An example of one previously identified biomarker is the Tn antigen, a carbohydrate moiety composed of a GalNAc residue linked to serine or threonine. Previous studies examining Tn antigen levels present in cervical cancer
tumors have produced conflicting results. The inventors discovered that this phenomenon is a direct result of using antibodies that are cross reactive to carbohydrates terminating in GalNAcα1-3Gal or GalNAcα1-6Gal. To precisely determine which carbohydrate antigen correlates with cervical cancer formation, the investigators produced a series of antibodies with high degrees of specificity for structurally distinct variants of the Tn antigen. The results show that relative to other carbohydrate antigens examined, GalNAcα1-3Gal is expressed at high levels in squamous carcinomas of the cervix. Importantly, expression levels of GalNAcα1-3Gal have a statistically significant correlation with 5-year survival rates.

Researchers at NCI developed antibodies with high specificity for GalNAcα1-3Gal, which can be used to both diagnose cervical cancer and as a prognostic tool. In addition to cervical cancer, elevated GalNAcα1-3Gal is present in a variety of other human carcinomas, including squamous cell carcinoma, esophageal cancer, laryngeal cancer, and skin cancer.

**POTENTIAL COMMERCIAL APPLICATIONS**
- Cervical cancer diagnostics and prognosis
- Research tool
- Immunohistochemical staining of a variety of carcinomas including cervical, larynx, and skin squamous cell carcinomas

**COMPETITIVE ADVANTAGES**
- Only monoclonal antibody known to bind the GalNAcα1-3Gal antigen but no other closely related structures, including blood group A, the Forssman antigen, and the Tn antigen.
- Binds various human tumor samples via immunohistochemistry
- The antibody is a rabbit IgG.

**INVENTOR(S)**
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**DEVELOPMENT STAGE**
- Basic (Target Identification)

**PUBLICATIONS**
Qian Li, et al. GalNAcα 1-3Gal, a New Prognostic Marker for Cervical Cancer. [PMID 19585575]

**PATENT STATUS**
- **U.S. Patent Issued:** U.S. Patent Number 8,957,188, Issued 17 Feb 2015

**THERAPEUTIC AREA**
- Cancer/Neoplasm