

FIBROBLAST GROWTH FACTOR RECEPTOR 4 (FGFR4) MONOCLONAL ANTIBODIES AND METHODS OF THEIR USE

SUMMARY (1024-CHARACTER LIMIT)

Researchers at the National Cancer Institute (NCI) developed several high-affinity monoclonal antibodies to treat Fibroblast Growth Factor Receptor 4 (FGFR4)-related diseases including rhabdomyosarcoma and cancers of the liver, lung, pancreas, ovary and prostate. These antibodies have been used to generate antibody-drug conjugates (ADCs) and chimeric antigen receptors (CARs), which are capable of specifically targeting and killing diseased cells. NCI seeks co-development opportunities or licensees for this technology.

NIH REFERENCE NUMBER

E-264-2015

PRODUCT TYPE

- Therapeutics

KEYWORDS

- Monoclonal Antibodies, Fibroblast Growth Factor Receptor 4, FGFR4, Rhabdomyosarcoma, RMS, Immunotherapy, Khan

COLLABORATION OPPORTUNITY

This invention is available for licensing and co-development.

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STATUS

Active

DESCRIPTION OF TECHNOLOGY

Several high-affinity monoclonal antibodies can be used to treat FGFR4-related diseases such as rhabdomyosarcoma and cancers of the liver, lung, pancreas, ovary and prostate. In particular, these antibodies have been used to generate ADCs and CARs specifically targeting and killing cancer cells.

Rhabdomyosarcoma (RMS) is the most common soft tissue sarcoma in children and adolescents.

Although current treatments for primary disease are relatively successful, metastatic RMS is generally accompanied by a dismal prognosis. Thus, there is a public health need for the development of new therapies for metastatic RMS.

Fibroblast Growth Factor Receptor 4 (FGFR4) is a cell surface protein that is highly expressed in RMS as well as in liver, lung, pancreatic, ovarian, and prostate cancers. Researchers in NCI's Genetics Branch found that high FGFR4 expression in RMS patients is often associated with advanced disease, rapid disease progression, and poor survival. The correlation between FGFR4 expression and highly aggressive RMS makes the protein an attractive target for treatment. Specific targeting of FGFR4 specifically may attack cancer cells while leaving healthy, essential cells unaffected.

POTENTIAL COMMERCIAL APPLICATIONS

- Development of unconjugated antibody therapeutics
- Development of antibody-drug conjugates (ADCs) and recombinant immunotoxins
- Development of chimeric antigen receptors (CARs) and T cell receptors
- Development of bispecific antibody therapeutics
- Development of diagnostic agents for detecting FGFR4-positive cancers

COMPETITIVE ADVANTAGES

- High affinity and specificity of the antibodies allows more selective targeting of cancer cells, reducing the potential for side effects during therapy
- Multiple antibodies available
- Potential to address significant unmet medical need

INVENTOR(S)

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DEVELOPMENT STAGE

- Pre-clinical (in vivo)

PATENT STATUS

- **U.S. Patent Filed:** U.S. Patent Application Number PCT/US2016/052496 , Filed 19 Sep 2016
- **U.S. Provisional:** U.S. Provisional Patent Application Number 62/221,045 , Filed 20 Sep 2015

THERAPEUTIC AREA

- Cancer/Neoplasm