

MONOCLONAL ANTIBODIES TARGETING TUMOR GROWTH

SUMMARY

The NCI Nanobiology Program, Protein Interaction Group is seeking parties to license or co-develop, evaluate, or commercialize monoclonal antibodies against the insulin-like growth factor for the treatment of cancer.

REFERENCE NUMBER

E-212-2011

PRODUCT TYPE

- Therapeutics

KEYWORDS

- prostate cancer
- leukemia
- tumor growth
- insulin-like growth factor
- IGF1R
- IGF

COLLABORATION OPPORTUNITY

This invention is available for licensing and co-development.

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DESCRIPTION OF TECHNOLOGY

The type 1 insulin-like growth factor (IGF) receptor (IGF1R) is over-expressed by many tumors and mediates proliferation, motility, and protection from apoptosis. Agents that inhibit IGF1R expression or function can potentially block tumor growth and metastasis. Its major ligands, IGF-I, and IGF-II are over-expressed by multiple tumor types. Previous studies indicate that inhibition of IGF-I, and/or IGF-II binding to its known receptor negatively modulates signal transduction through the IGF pathway and associated cell proliferation and growth. Therefore, use of humanized or fully human antibodies against IGFs represents a valid approach to inhibit tumor growth.

Researchers at the National Cancer Institute [NCI Nanobiology Program, Protein Interaction Group](#)

NCI Technology Transfer Center

<https://techtransfer.cancer.gov/pdf/e-212-2011.pdf>

recently generated two monoclonal antibodies, designated m610.27 and m630, and a bispecific monoclonal antibody, m660, by linking domains from m610.27 and m630. All three antibodies display high affinities for IGF-I and IGF-II in the pM to nM range. The antibodies inhibited signal transduction mediated by the IGF-1R interaction with IGF-I and IGF-II and blocked phosphorylation of IGF-IR and the insulin receptor. m610.27 and m630 are the first pair of human antibodies that target non-overlapping epitopes on IGF-II. All three antibodies in an IgG1 or IgG1-like format could lead to irreversible elimination of IGF-II from circulation making it a viable candidate for cancer treatment.

Related Opportunities

US Patent 7,824,681 (11/02/2010); US Patent Applications 12/889,345 (9/23/2010) and 12/296,328 (10/07/2008); PCT Application. PCT/US2010/051784 (10/07/2010); US Provisional Application 61/474,6624 (04/12/2011)

POTENTIAL COMMERCIAL APPLICATIONS

- Therapeutic for the treatment of various human diseases associated with aberrant cell growth and motility such as breast, prostate, and leukemia cancers.
- Research reagent to study IGF-I and/or IGF-II binding and its association with tumor growth.

COMPETITIVE ADVANTAGES

- m610.27 and m630 are the first characterized antibodies that target non-overlapping epitopes on IGF-II
- m660 was generated from two domains; one each from m610.27 and m630.
- Small size of the m610.27 and m630 domains prevent overlapping in binding to IGF-II.

INVENTOR(S)

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DEVELOPMENT STAGE

- Discovery (Lead Identification)

PATENT STATUS

- U.S. Issued: U.S.9,127,056

THERAPEUTIC AREA

- Cancer/Neoplasm