Treatment of Lymphoma and Other Cancers with Anti-EphA2-CD20 scFv Fusion Antibody

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Technology description

Summary of Invention

The ephrin (Eph) receptors are a subcategory of receptor tyrosine kinases that play important roles in cell survival and function, making them sought-after therapeutic targets in both liquid and solid tumors. EphA2 is a sensory receptor protein on the surface of both normal and cancerous lymphocytes and other cells. Inappropriate activation is known to be the cause of follicular and other lymphomas, as well as a contributing factor in leukemias such as AML. Generation of antibodies against the Eph receptor family has proven difficult because the receptors are highly conserved between species, making it almost impossible to create antibodies using classical murine technology.
Through the use of recombinant antibody phage library technology, MSK investigators have generated a novel anti-EphA2 single-chain antibody (scFv) that shows high specificity for EphA2 and blocks ephrin attachment to the receptor by binding to the same surface cavity as the ligand (as confirmed by crystal structure analysis). The anti-EphA2 scFv has been shown to induce apoptosis and reduce cell proliferation in lymphoma and leukemia cell lines. Our investigators also have generated an anti-EphA2-CD20 scFv fusion antibody to enhance the potential for clinical application by selectively delivering the anti-EphA2 activity to CD20-expressing lymphoma cells.
This innovative approach offers the potential to focus on an important but previously challenging target in lymphoma therapy. MSK investigators continue to progress through preclinical work, with the potential for sponsored research or additional collaboration structures.

Key Publications

Goldgur Y et al. (2014) Generation and characterization of a single-chain anti-EphA2 antibody.Growth Factors(PubMed link)

Market Need

Follicular lymphoma is the second most common type of lymphoma, with about 18,000 new cases in the U.S. annually. Based on sales of Rituxan, the potential market for an EphA2-CD20 fusion antibody

would be about $2 billion in the U.S. and $6 billion worldwide. Other potential indications include a range of leukemias.

Institution

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