Monoclonal Antibody 1G6-D7 Blocks Cancer Metastasis

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Technology description

Market Opportunity

Both intracellular and extracellular heat shock protein-90 (Hsp90) family proteins (a and b) have been shown to support tumor progression. Targeting intracellular Hsp90, however, has proven too toxic to cancer patients resulting in a very small number of trials advancing to receive regulatory approval for human treatment to date.

The role of extracellular Hsp90 in cancer recently has been unveiled by USC scientists who showed that secreted Hsp90α is essential for tumor formation, invasion, and metastasis of triple negative breast cancer. In contrast to normal cells, which do not secrete Hsp90-α under physiological conditions, more than 50% of all invasive, HIF-1-positive tumors in humans constitutively secrete Hsp90-α. Furthermore, targeting the secreted form of Hsp90 does not affect normal tissue functions. Therefore, selective inhibition of tumor-secreted Hsp90a, which is nonessential for normal cells, could be an effective therapeutic approach for certain cancers.

USC Solution

USC scientists recently developed a monoclonal antibody, called 1G6-D7, which targets tumor-secreted Hsp90a. 1G6-D7 binds the active site of tumor-secreted Hsp90a and inhibits both de novo tumor formation and expansion of pre-formed tumors in mice. This development suggests an alternative therapeutic approach to target Hsp90 in cancer, i.e. selective inhibition of the tumour-secreted Hsp90a, instead of the intracellular Hsp90a and Hsp90b that have been proven toxic.

Application area

Treatment and prevention of tumor formation and metastasis
Research reagent (monoclonal antibody)

Advantages

An alternative therapeutic approach to target Hsp90 in cancer by targeting tumor-secreted Hsp90α

1G6-D7 Mab shown to inhibit new tumor formation, growth of existing tumors, and metastasis in mouse CDX models
Potential to treat multiple types of cancer, including but not limited to breast and lung cancer

Institution

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