

Use of Anti-CD47 Antibodies for the Treatment of Cancer

Summary

Researchers at the National Cancer Institute found that the absence of CD47 enhances stem cell renewal in vitro and in vivo by increasing expression of four stem cell transcription factors.

NIH Reference Number

E-263-2014

Product Type

- Therapeutics

Keywords

- CD47
- stem cell

Collaboration Opportunity

This invention is available for licensing and co-development.

Contact

- Jaime Greene
NCI TTC

greenajaime@mail.nih.gov (link sends e-mail)

Description of Technology

High expression of CD47, a cell surface receptor on several types of cancer cells, has been identified as a 'don't eat me signal' that inhibits their killing by macrophages or NK cells. Conversely, the CD47 antibody B6H12 that blocks SIRP α binding enhances macrophage-dependent clearance of tumors in several mouse models, although others have shown that such clearance can be independent of SIRP α signaling.

Cancer stem cells (CSCs) are tumorigenic cells that are difficult to target with conventional chemotherapies due to their undifferentiated state. Stem cells also play an important role in the pathogenesis of cancer. CSCs have been reported to express elevated CD47 levels, but the role of CD47 in directly regulating cancer stem cell function has not been examined.

Researchers at the National Cancer Institute's [Laboratory of Pathology](#) found that the

absence of CD47 enhances stem cell renewal *in vitro* and *in vivo* by increasing expression of four stem cell transcription factors (see related technologies below). More recently, they discovered methods to force differentiation of breast cancer stem cells by targeting the receptor CD47. These methods disrupt EGF receptor signaling and up-regulate tumor suppressor gene expression in breast cancer stem cells from triple negative breast cancers, but have no effect on normal mammary epithelial cells.

Related technologies include:

U. S. Patent 8,236,313; U. S. Patent 8,557,788; U. S. Patent 8,865,672; U. S. Patent No. 8,951,527

U.S. Patent Application No. 61/735,701 filed December 11, 2012

Application PCT/US2014/025989 filed March 13, 2014

Potential Commercial Applications

- Treatment for breast cancer and other cancers
- Antibodies for biomedical research

Competitive Advantages

Monoclonal antibodies that directly target CD47-expressing cancers

Inventor(s)

[David D. Robert \(NCI\)](#)

Development Stage

- Pre-clinical (in vivo)

Patent Status

- **U.S. Patent Filed:** U.S. Patent Application Number 62/062,675, Filed 10 Oct 2014
- **Foreign Filed:** Foreign Filed - Patent Application PCT/US2015/055029, Filed 09 Oct 2015

Related Technologies

- [E-086-2012 - Method for Generating Pluripotent and Multipotent Cells](#)

Therapeutic Area

- Cancer/Neoplasm

Updated

Friday, September 16, 2022

Source URL: <https://techtransfer.cancer.gov/availabletechnologies/e-263-2014>