BALB/c-hCD44

Strain Name：BALB/cGpt-*CD44*$^{em1Cin(hCD44)}$/Gpt

Strain Type：Knock-in

Strain ID：T056010

Background：BALB/cGpt

Description

CD44 is a cell surface glycoprotein involved in cell interaction, cell adhesion and migration. It acts as a receptor for hyaluronic acid (HA). They can also interact with other ligands, such as osteopontin, collagen, and matrix metalloproteinases (MMPs). This protein is involved in a variety of cellular functions, including lymphocyte activation, circulation and homing, hematopoiesis, and tumor metastasis [1]. CD44 is a recognized marker of tumor stem cells and a key regulator of epithelial-mesenchymal transformation (EMT), which is involved in tumor genesis, progression and metastasis. In recent years, more and more studies have found that CD44 is closely related to the occurrence, growth, invasion, metastasis and prognosis of various tumors [2]. CD44 is also thought to be an integrated transmembrane glycoprotein, capable of receiving the action of cytokines in the cell microenvironment, integrating the received signal, releasing the intracellular domain of CD44 through the action of lyase, and transmitting its signal to the nucleus. Thus playing a regulatory role [3].

Using gene editing technology, we replaced the extracellular region of the BALB/c-hCD44 gene with the corresponding human-derived gene fragment, while retaining the intracellular signaling region of the corresponding mouse-derived gene, ensuring that the correct cell signaling is not affected. The constructed BALB/c-hCD44 will be an ideal animal model for evaluating human CD44-targeting drugs.

Strategy

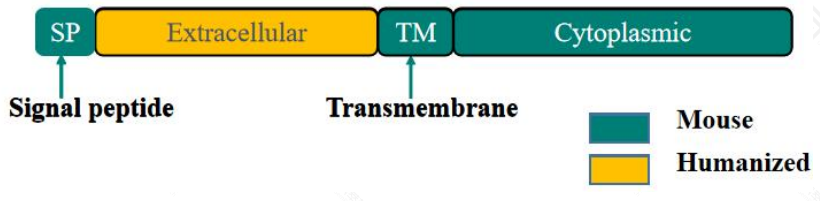

Figure 1 Schematic diagram of CD44 humanization strategy in BALB/c-hCD44 mice

Applications

1. Efficacy evaluation of human CD44 antibody;
2. Safety evaluation of human CD44 antibody;
3.Tumor-related research;

Data Support

1. Protein expression assays

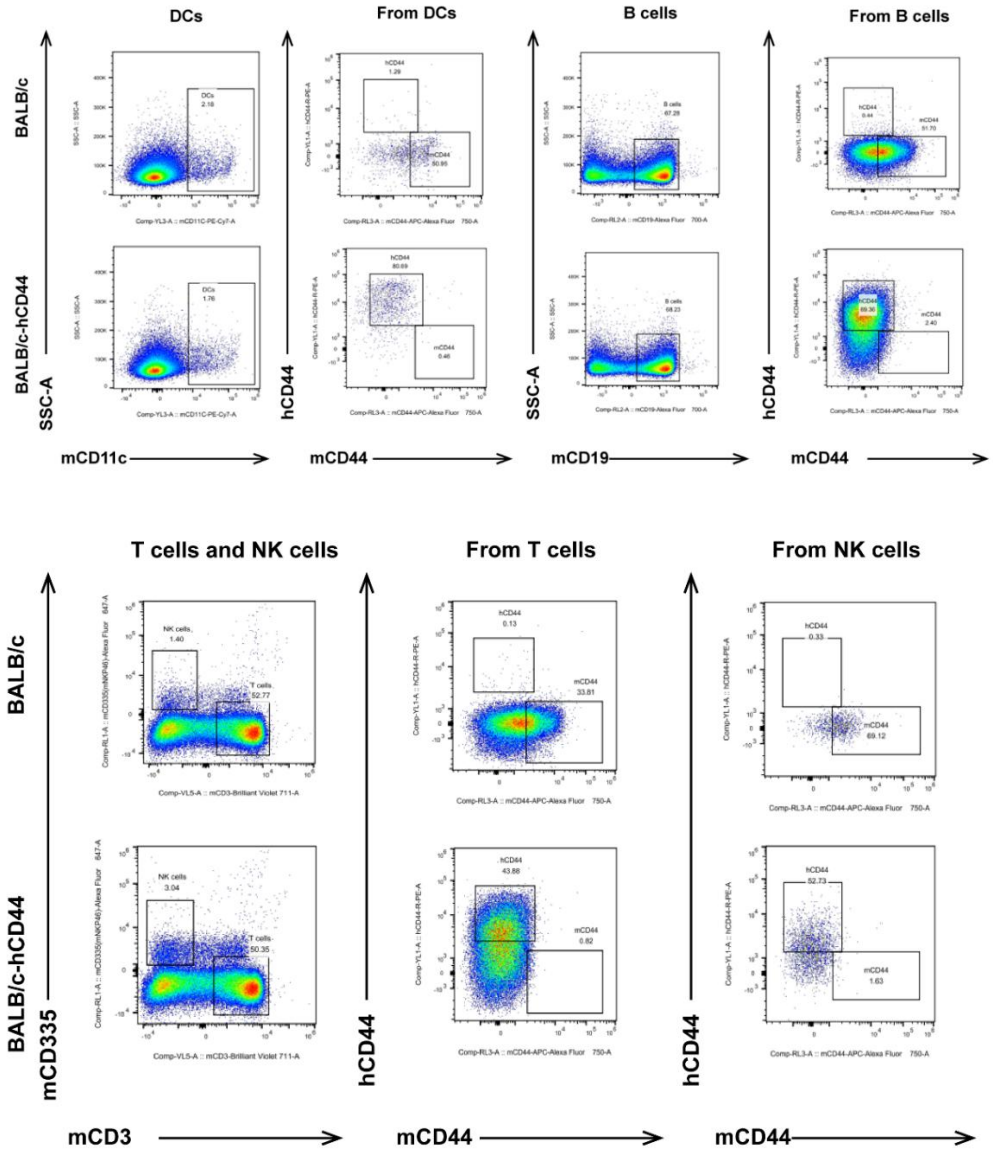

Figure 2 CD44 Protein expression assay in BALB/c-hCD44 mice

The spleens of WT mice and CD44 humanized mice were collected for flow cytometry. The results indicated that only mCD44 protein expression was detected in DCs, B cells, T cells and NK cells of

spleen of BALB/c mice. Only hCD44 protein was detected in DCs, B cells, T cells and NK cells of spleen of BALB/c-hCD44 mice.

2. The population of cell detection

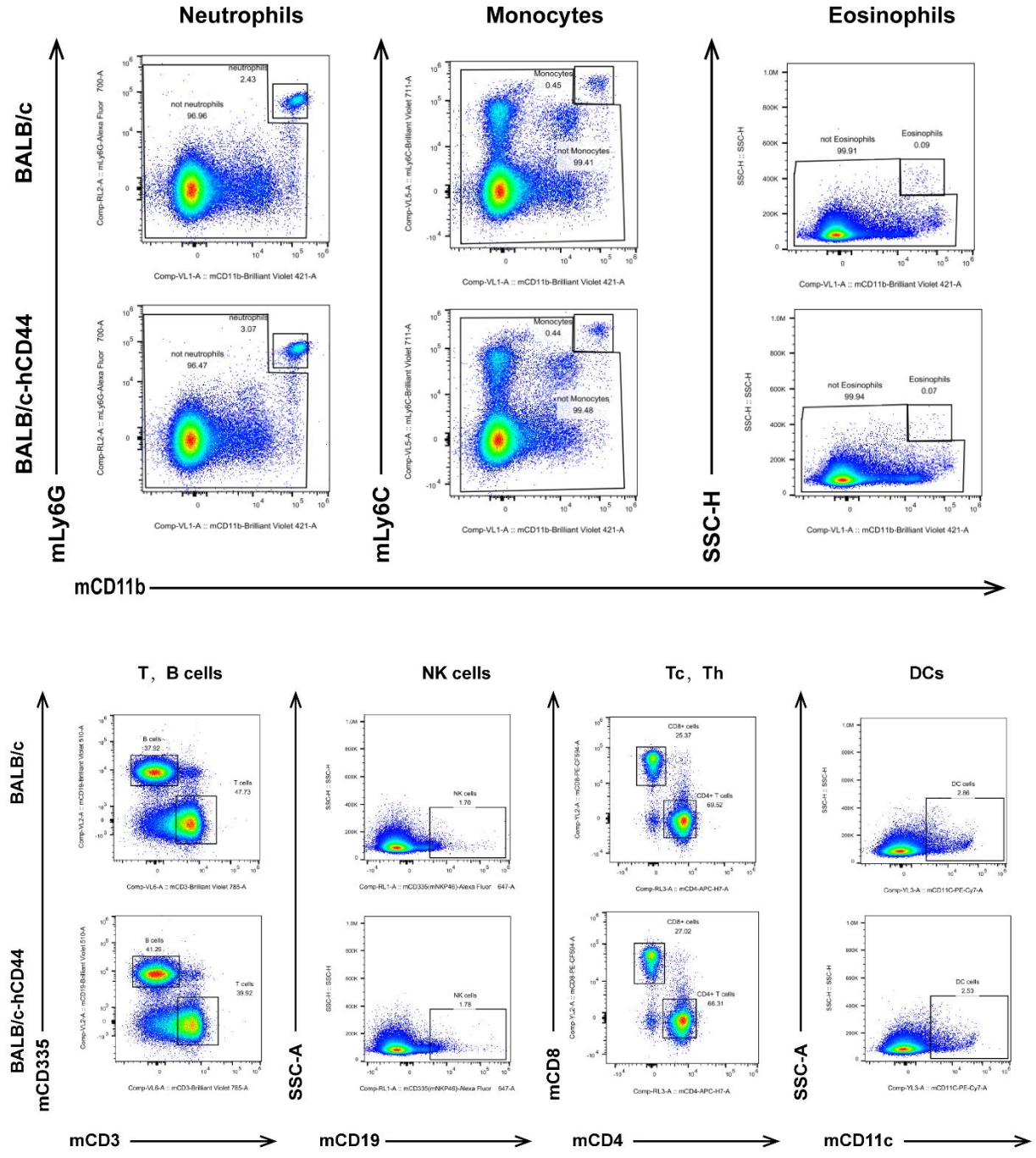

Figure 3 BALB/c-hCD44 mice T/B/NK, Neutrophils, Monocytes, Eosinophils, DCs cell ratio assay

cell ratio assay

The spleens of WT mice and CD44 humanized mice were collected for flow cytometry. The results showed that the proportion of T/B/NK, Neutrophils, Monocytes, Eosinophils, and DCs in the spleen of wild-type mice and CD44 humanized mice were close.

References

1.Hassn Mesrati M, Syafruddin SE, Mohtar MA, Syahir A. CD44: A Multifunctional Mediator of Cancer Progression. Biomolecules. 2021 Dec 9;11(12):1850.

2.Mattheolabakis G, Milane L, Singh A, Amiji MM. Hyaluronic acid targeting of CD44 for cancer therapy: from receptor biology to nanomedicine. J Drug Target. 2015;23(7-8):605-18.

3.Heldin P, Kolliopoulos C, Lin CY, Heldin CH. Involvement of hyaluronan and CD44 in cancer and viral infections. Cell Signal. 2020 Jan;65:109427.