Bi-specific Immunoglobulin (BiSig) Therapeutic for the Treatment

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Technology description

This technology concerns a bispecific antibody molecule (CD123 targeting bispecific scFv immunofusion). This molecule can be used as a treatment therapy for CD123-positive malignant diseases, including Acute Myeloid Leukemia (AML) and Blastic Plasmacytoid Dendritic Cell Neoplasm (BPDCN). This molecule consists of N-terminal anti-CD123 binding single-chain Fv (scFv) and C-terminal anti-T cells binding scFv, which are fused to human IgG hinge-CH2-CH3 domains. This bispecific antibody forms a homo-dimeric quaternary structure. It has been demonstrated to re-direct cytotoxic T lymphocytes to kill specific targeted cells, including CD123-transfected CHO-K1 cells and AML cell lines but not control CHO-K1 cells at an effector to target ratio as low as 2 and at the low pM range. A CD33 targeting bispecific antibody and a PSMA targeting bispecific antibody have been tested in in vitro tissue culture systems with promising results. There are plans to advance drug testing to animal tumor models.
Cancer remains the second leading cause of death in the U.S. Though treatments and survival rates have improved for some cancer types, there remains a need to develop more effective targeted therapies. Bispecific antibody technologies can help fill this need, and have shown great promise in the field of cancer immunotherapy. This technology concerns a bispecific antibody molecule for the treatment of CD123-positive malignant diseases, including Acute Myeloid Leukemia (AML) and Blastic Plasmacytoid Dendritic Cell Neoplasm (BPDCN).

Application area

A rapidly growing area of cancer research concerns bispecific antibody technologies because of their ability to effectively target and kill cancer cells. Unlike monoclonal antibodies, bispecific antibodies can have improved structure and functionality to better combat diseases. This technology concerns a bispecific antibody molecule for the treatment of CD123-positive malignant diseases, including Acute Myeloid Leukemia (AML) and Blastic Plasmacytoid Dendritic Cell Neoplasm (BPDCN).

Advantages

- This technology addresses problems associated with existing bispecific antibody drugs, such as short serum half-life, drug heterogeneity and complicated drug manufacturing processes
- This technology can be used as a platform technology to expand a variety of cancer indications

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