A Novel Anti-CD79B ADC for the Treatment of Non-Hodgkin Lymphoma

Overview

Drug Name	BioLink018
Description	BioLink018 is a safe and potent antibody-drug conjugate (ADC) targeting CD79B that developed by a proprietary site-specific chemical conjugation technology. BioLink018 is a promising therapeutic strategy in non-Hodgkin lymphoma, which showed superior pharmacokinetic profile and anti-tumor activity in vitro and in vivo. BioLink018 is in early clinical development for the treatment of non-Hodgkin lymphoma. The phase I clinical trial in China is expected to be completed in December 2023, and the application of phase II clinical trial in the United States will be filed in the same year.
Target	CD79B
Drug Modality	Antibody-drug conjugate
Indication	Non-Hodgkin lymphoma
Product Category	Cancer immunotherapy
Mechanism of Action	Delivering cytotoxic agents specifically into malignant cells
Status	Phase I (NMPA)
Patent	Granted

Collaboration Opportunity

Protheragen Inc. is actively seeking partnership for BioLink018. Potential collaboration can be strategic alliance, licensing, or marketing agreement.
We look forward to hearing from you.

Target

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CD79B Molecule

Introduction	CD79B is a subunit of the heterodimer B-cell receptor Igα/Igβ (CD79A/CD79B) which is expressed on mature B cells but absent on plasma cells. A majority of mature malignancies of B-cell origin, including non-Hodgkin lymphoma and chronic lymphocytic leukemia, express CD79B and demonstrate rapid internalization of anti-CD79B antibodies.
Approved Name	CD79B molecule
Official Symbol	CD79B
Gene Type	Protein coding
Synonyms	B29; Ig-beta; Igbeta
Ensembl	ENSG00000007312
Gene ID	974
mRNA Refseq	NM_000626
Protein Refseq	NP_000617
OMIM	147245
UniProt ID	P40259
Chromosome Location	17q23.3

Clinical Resources

Gene Function	Chronic active B cell receptor signaling is a pathogenetic mechanism in the activated B cell-like (ABC) subtype of diffuse large B-cell lymphoma (DLBC). Somatic mutations affecting the CD79B and CD79A subunits of B cell receptors were detected frequently in ABC DLBCL biopsy samples. A functionally critical residue of CD79B was mutated in 18% of ABC DLBCLs.
Pathway	Chronic active B cell receptor signaling
Major Conditions	Non-Hodgkin lymphoma

Drug Modality

Antibody-drug Conjugate

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Depending on a proprietary site-specific chemical conjugation method for tethering the antibody and payload components, BioLink018 is an antibody-drug conjugate (ADC) developed with a optimal drug-antibody ratio (DAR) value. BioLink018 binds to CD79B-expressing malignant cells and destroys these malignant cells through the delivery of the anticancer agent, while having a minimal effect on normal cells.

Indication

Non-Hodgkin Lymphoma

Non-Hodgkin lymphoma is one type of lymphomas and refers to various closely related lymphoproliferative malignancies. The International Agency for Research on Cancer (IARC) estimates that there were 544,352 cases of non-Hodgkin lymphoma diagnosed worldwide in 2020. Based on incidence data from the GLOBOCAN 2008 database and projected population increases, the World Economic Forum estimates that 583,681 new cases of non-Hodgkin lymphoma will be diagnosed worldwide in 2030. Non-Hodgkin lymphoma is broadly divided into two major categories: B-cell lymphomas and T-cell and NK-cell lymphomas. B-cell lymphomas develop from abnormal B lymphocytes and account for 85 to 90% of all non-Hodgkin lymphomas.
Diffuse large B-cell lymphoma (DLBCL) is the most common form of non-Hodgkin lymphoma in all countries and age groups, accounting for up to one-third of newly diagnosed cases. Diffuse large B-cell lymphoma is an extremely aggressive form of lymphoma that may arise in lymph nodes or outside of the lymphatic system, in the gastrointestinal tract, testes, thyroid, skin, breast, bone or brain. On the basis of gene-expression profiling (GEP) studies, at least three molecular subtypes of DLBCL, including germinal center B cells (GCB), activated B cells (ABC) and primary mediastinal B cells, have been distinguished according to the stage of differentiation of the B cells from which the abnormal lymphocytes are derived.

Mechanism of Action

Delivering Cytotoxic Agents Specifically into Malignant Cells

B-cell receptor (BCR) is a multi-protein complex on the surface of mature B lymphocytes and plays a central

role in the pathogenesis and proliferation of diffuse large B-cell lymphoma (DLBCL). The BCR consists of a surface immunoglobulin (Ig) coupled to a CD79A and CD79B heterodimer, which is required for proper cellular localization, trafficking, and signaling. Two transmembrane subunits, CD79A and CD79B, represent the signal transduction portion of the BCR. CD79A and CD79B are expressed only in mature and immature B cells and in the vast majority of B cell neoplasms, especially non-Hodgkin lymphoma. CD79B is one of the most frequently mutated genes in DLBCL and contributes to the chronic activation of BCR signaling, a hallmark of ABC subtype of DLBCL.

An attractive approach to the treatment of non-Hodgkin lymphoma is the use of antibody-drug conjugates (ADCs). BioLink018 is a potent ADC that consists of an anti-CD79B monoclonal antibody conjugated to a cytotoxic agent. The site-specific chemical conjugation involved in the synthesis of BioLink018 results in an optimal drug-antibody ratio (DAR) value, which can maximize the balance of efficacy, tolerability, and cytotoxicity profiles of BioLink018. The high-affinity anti-CD79B antibody of BioLink018 specifically binds to CD79B on the surface of tumor cells, ensuring targeted delivery of highly effective cytotoxic agents and enabling tumor site accumulation of cytotoxic agents. Cytotoxic agents impede cellular mechanisms necessary for tumor survival, leading to cell death.

Status

The Status of BioLink018

BioLink018 is in early clinical development in China for the treatment of patients with non-Hodgkin lymphoma. The phase I clinical trial is expected to be completed in December 2023, and the application of phase II clinical trial in the United States will be filed in the same year.