NATIONAL CANCER INSTITUTE
Technology Transfer Center

Human and Improved Murine Monoclonal Antibodies Against CD22

Summary

The National Cancer Institute (NCI) seeks research and co-development partners and/or licensees for human monoclonal antibodies and antibody-based therapeutics targeting the B-cell antigen CD22

NIH Reference Number

E-080-2008

Product Type

- Therapeutics

Keywords

- Human, Monoclonal, Antibodies, B-cell, Antigen, CD22, B-Cell Lymphoma, BCL, Hairy Cell Leukemia, HCL, non-Hodgkins lymphoma, NHL, Chronic Lymphoblastic Leukemia, CLL, Oncology, Cancer, Dimitrov

Collaboration Opportunity

This invention is available for licensing and co-development.

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Description of Technology

CD22 is a common cell surface glycoprotein expressed in B-cells and present in B-cell lymphomas; e.g., hairy cell leukemia (HCL), non-Hodgkins lymphoma (NHL), chronic lymphoblastic leukemia (CLL), and other cancers. It is therefore a target for cancer immunotherapy. Conjugation of anti-CD22 monoclonal antibodies with toxins or drugs has shown promise in clinical trials. However, all monoclonal anti-CD22 antibodies used in clinical trials are of murine origin. This is problematic because they have the potential of causing immunogenic reactions when used repeatedly in patients to achieve higher efficacy.

NCI scientists isolated two human monoclonal anti-CD22 Fab antibodies; m972 and m971 with 2nM and 20nM affinities respectively. These two human anti-CD22 monoclonal antibodies are better alternatives for cancer immunotherapy over current humanized

murine antibodies as they overcome the problem of immune reactivity. They also developed a murine anti-CD22 monoclonal antibody M973 with better affinity and solubility than its parent antibody HA22 and could have improved efficacy in cancer immunotherapy than the murine monoclonal anti-CD22 antibodies currently in use. The m971 binder has also been incorporated into chimeric antigen receptors (CARs) with positive results which are covered under NIH Reference Number E-291-2012 and other related filings.

Researchers at the NCI seek research and co-development partners and/or licensing for the development of human monoclonal antibodies and antibody-based therapeutics against CD22.

Potential Commercial Applications

- Monoclonal antibody therapeutic against B-cell lymphomas and other CD22-positive cancers
- Diagnostic tool for detection of CD22-positive cancers
- Delivery of drugs, toxins and liposomes to CD22-positive cancers

Competitive Advantages

- Fully human monoclonal antibodies overcome the problem of immune reactivity to murine antibodies
- Improved monoclonal antibodies have better affinity and solubility than current antibodies

Inventor(s)

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Development Stage

- Pre-clinical (in vivo)

Publications

- Xiao X, et al. Identification and characterization of fully human anti-CD22 monoclonal antibody.

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Patent Status

- **U.S. Patent Issued:** U.S. Patent Number 8,591,588, Issued 26 Nov 2013
- **U.S. Patent Issued:** U.S. Patent Number 9,279,019 , Issued 08 Mar 2016
- **U.S. Patent Issued:** U.S. Patent Number , Issued 21 Mar 2017
- **U.S. Patent Issued:** U.S. Patent Number 10,494,435 , Issued 03 Dec 2019

Related Technologies

- E-291-2012 - Chimeric Antigen Receptors to CD22 for Treating Hematological Cancers
- E-161-2018 - Improved CD22 Binders for Effective Immunotherapy Against Relapsed or Refractory Acute Lymphoblastic Leukemia (ALL)
- E-017-2017 - Dual Specific Anti-CD22 Anti-CD19 Bicistronic Chimeric Antigen Receptors (CARs)
- E-106-2015 - Bivalent, Dual Specific Anti-CD22 Anti-CD19 Chimeric Antigen Receptors (CARs)

Therapeutic Area

- Cancer/Neoplasm

Updated

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