Site-Specific Ligation and Compound Conjugation to Existing Antibodies

Tech ID: 27202 / UC Case 2015-138-0

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OTHER INFORMATION

KEYWORDS

anti-body drug conjugates, site specific linker, fab crosslinker, chemotherapy

CATEGORIZED AS

- **Medical**
  - Disease: Cancer

RELATED CASES

2015-138-0

ABSTRACT

Researchers at the University of California, Davis have developed a unique method for site-specific ligation and conjugation of compounds to existing antibodies.

FULL DESCRIPTION

Traditionally, non-specific ligation methods have been used to chemically modify immunoglobulins. Through these methods, cytotoxic compounds are generally conjugated to antibodies via targeting of: (i) amines of lysine residues and (ii) free sulfhydryls of cysteine residues. These modifications, however, lead to heterogeneous products due to the multiple instances of identical functional groups. Therefore, there is a need for site-specific modification of immunoglobulins to establish homogenous immunoconjugates.

Researchers at the University of California, Davis have developed a unique method for site-specific ligation and conjugation of compounds to antibodies via direct binding of a ligand to the Fab arm. This method can be used to conjugate compounds to existing monoclonal and polyclonal antibodies, reducing production costs and shortening the preclinical-to-clinical translation times. The modification itself can be performed in very mild conditions, providing a viable method to create uniform antibody drug conjugates and bispecific antibodies. The method has been verified *in vitro* with human breast cancer cells and trastuzmab.

APPLICATIONS

- Therapeutics against cancer or infectious agents
- Bispecific antibodies

FEATURES/BENEFITS

- Reduced production costs
- Reduced preclinical-to-clinical translation times
- Mild reaction conditions
- Site-specific ligation and conjugation
- Can be used with existing antibodies

RELATED MATERIALS

- Covalent Chemical Ligation Strategy for Mono- and Polyclonal Immunoglobulins at Their Nucleotide Binding Sites Diana Lac, Chun Feng, Gaurav Bhardwaj, Huong Le, Jimmy Tran, Li Xing, Gabriel Fung, Ruiwu Liu, Holland Cheng, and Kit S. Lam Bioconjugate Chemistry 2016 27 (1), 159-169 DOI: 10.1021/acs.bioconjchem.5b00574 - 12/02/2015

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,588,982	03/17/2020	2015-138

Additional Patent Pending

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Novel Solid Tumor Chemodrug LLS2

- Affinity Peptides for Diagnosis and Treatment of Severe Acute Respiratory Syndrome Coronavirus 2 and Zika Virus Infections
- Nanoparticles for Drug Delivery, Tissue Targeting and Imaging Analysis
- Conjugates That Combine HDAC Inhibitors and Retinoids into Disease Preventatives/Treatments
- Artificial Intelligence-Based Evaluation Of Drug Efficacy
- A Novel RGD-Containing Cyclic Peptide for use in Cancer Imaging and as a Targeted-Therapy Ligand
- Ligands for Alpha-4-Beta-1 Integrin
- Functional Illumination in Living Cells
- Multifunctional Porphyrin-Based Nanomedicine Platform
- A Two-step Drug Delivery System Based on Click Chemistry
- Transformable Smart Peptides as Cancer Therapeutics
- Engineered Biomaterial to Prevent Endothelial Inflammation
- Programmable Peptide Nucleic Acid-Based Nanoplatform for Customizable Drug Delivery
- Systems and Methods of Single-Cell Segmentation and Spatial Multiomics Analyses
- Nanoplatform for Cancer Therapy

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