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Site-Specific Ligation and Compound Conjugation to Existing Antibodies

Tech ID: 27202 / UC Case 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 trastuzumab.

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

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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

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
- ▶ Engineered Biomaterial to Prevent Endothelial Inflammation
- ▶ Early Detection of Ovarian Cancer Using Markers to Short Chain Carbohydrates
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