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 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 Bhwardaj, 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

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Additional Patent Pending
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
PVA Nanocarrier System for Controlled Drug Delivery